RISC user

April 1996
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The magazine for users of Acorn RISC computers

Apple Special:

- RISC OS and Mac OS Compared
- Swapping files with Macs
- Brendan O'Sullivan Interviewed
- CHRP: An ART Perspective

Plus

- Online Media on Trial

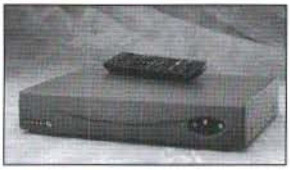
THE MAGAZINE
FOR USERS OF
ACORN RISC
COMPUTERS

RISC user

FEATURES

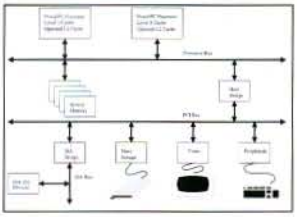
What's Cooking at Acorn Online Media? 8

We look at what the future holds for the interactive set-top box branch of Acorn



Something to Sing About . . .19

Alex Bienek, a hardware systems design engineer at ART, introduces the CHRP architecture



DTP Workshop 15

Our practical desktop publishing series continues with a roundup of professional DTP packages

Education. .25

This month we look at internet providers for schools.

APPLE FEATURE

AppleCorn 23

Educational implications of the Acorn-Apple joint venture

A Tale of Two Desktops . . 27

The Mac OS desktop looks set to become a lot more familiar to Acorn users. We look at how it compares with RISC OS

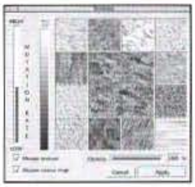
Apple Matters. 30

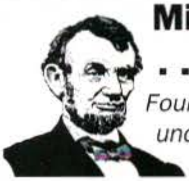
Transferring files from Apple to Acorn

REVIEWS

Studio 24 Pro . .12

The latest version of Pineapple's graphics package may be the ideal tool for artists





Mini Reviews 53

Four CD-ROMs from APDL come under scrutiny

Select and Collect 35

Simon Burrows takes a look at the latest public domain and shareware releases

Spelling Book 56

A pop-up dictionary from CCS which is handy for your children's writing needs

REGULARS

News 4
Magazine Disc 32
Puzzle 34
Hints and Tips 47
Graphics Notebook 48
Classified Ads & Advertisers' Index . . 62
RISC User Subscriptions 63

CONTENTS *& Editorial*

Wimp Topics 41

Alan Wrigley explains how to display sprites correctly regardless of screen mode

Compiler Corner 44

Julian Smith, moderator of DeskLib, talks about the latest version of this C library

Event_Process

Declaration for Event_Process from DeskLib Core:h_dot.Event

(Function prototype)

```
extern void Event_Process(event_pollblock *event);
/*
 * Call this to process a Wimp_Poll event. It will cascade the event down
 * through the event handler hierarchy until one of your event handlers
 * returns TRUE to indicate successful handling of the message.
 * NOTE that Event_Poll calls Wimp_Poll and Event_Process for you.
 */
```

Open original source file

See header file's help page

Netline 50

Robin Watts explains Java on the Web

Big Apple 38

We talk to Brendan O'Sullivan, MD of the new Acorn-Apple Joint Venture Company

HTMLEdit version 2 58

Do you fancy creating your own Web pages? This is the easy way to go about it

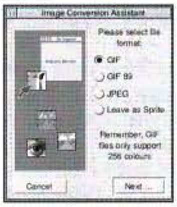


Image Conversion Assistant

Please select file format:

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○ GIF 89

○ JPEG

○ Leave as Sprite

Remember, GIF files only support 256 colours

Cover Photography

Lee Calcraft

The key to success in many businesses is partnership. Treading your own path is certainly to be applauded, but it is important not to become blinkered; having extremely good basic technology and then establishing partnerships in order to produce innovative and powerful products is the way to be successful. Excellent technology cannot succeed in isolation if it is incompatible with other inferior but entrenched technology. Similarly, powerful partnerships cannot succeed indefinitely if the partners are working with poor technology to start with.

ARM is currently proving this to be true: the company's partners are diverse, its underlying technology is the best around, and as a result the company's products are proving themselves consistently to be better than their competitors; and the potential future markets are simply staggering. The other side of the coin is the range of processors found in desktop PCs, which are derided by those who understand them. The latest Pentium chips certainly go fast, but at what cost? The very first model of the StrongARM chip is much faster than even the latest successors to the Pentium (leaving aside issues of floating-point support) and is incredibly efficient and cheap; whereas the Pentium series is both expensive and hugely inefficient.

I foresee that a similar ARM-like situation could become established with ART. That company is already responsible for the world's best graphical user interface (RISC OS and associated technologies), and now that it is free to work in partnership with others, the potential rewards are enormous. The various NetSurfer-style boxes which are appearing from several companies are based on RISC OS, and the Oracle Network Computers will also be based on RISC OS. Such machines are going to pervade homes, schools and businesses across the whole world, not just the UK, and they have the potential to bind the world together in one vast interconnected information resource which is available to everyone.

These boxes won't have Acorn's name on the front, but they will have Acorn's technology inside them, which is what really matters. Monopolies are rarely (if ever) desirable, and so it is very much as it should be that individual companies will be producing their own unique products based on the reference designs. What is important is that the underlying standards to which everyone works are good; and it is those standards that Acorn will be helping in a large part to define. Imagine a world where all new computers are fully compatible with each other, but are based on the very best technology instead of the very worst. Such a time must eventually come. The future is bright.

***Special Apple issue** In view of the new joint venture between Acorn and Apple, this issue of RISC User features various Macintosh-related topics. We hope you will find the articles interesting, but don't worry; it isn't the beginning of the end! RISC User is not going to turn into an Apple magazine!*

Richard Hallas

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Oracle helps Acorn to get connected

Following January's announcement of a development and licensing agreement with Oracle, Acorn has sprouted yet another new branch: Acorn Network Computing. Oracle's requirements can be met in the short term by existing Acorn technologies and partnerships within the existing developer base, but in the longer term, the Oracle agreement will allow Acorn to develop its technologies faster than it could otherwise have done; and they will be marketed on a worldwide scale.

Acorn has formed the Network Computing division in order to address these new long-term opportunities. The new division is headed by Malcolm Bird and comprises some 30 people, including the majority of the development staff from Acorn Online Media together with some personnel from Acorn Risc Technologies. It will create the Reference Designs for Oracle and also be the source of its own range of network computing products for distribution through Acorn Online Media and the new Acorn-Apple educational joint venture. The team is working on the integration of Java capabilities into RISC OS, and is also working with Macromedia on run-time support for Macromedia Director. Both of these are extremely important, and Larry Ellison, Chief Executive of Oracle, has stated that his Network Computers will be shipped with a free Microsoft Office-style suite of applications which are written in Java. Any machine which supports the Java language will be able to run the applications.

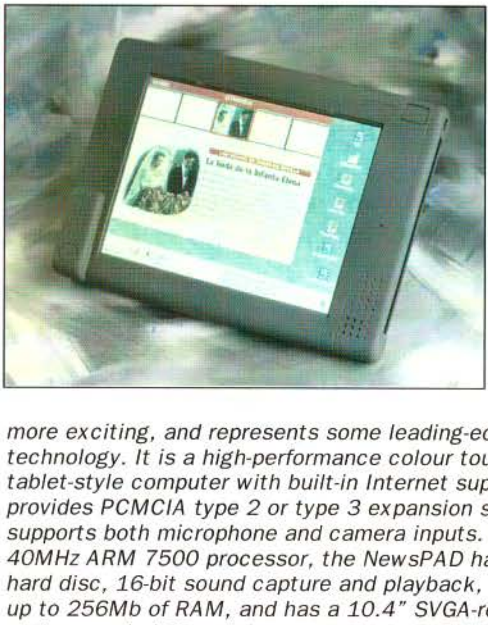
With Malcolm Bird and the development staff of Online Media moving over to the new Network Computing division, it is expected that Online Media itself will become more of a sales and marketing operation. Simon Wyatt, previously sales and marketing manager at Online Media, is replacing Malcolm Bird at the helm of the division. Online Media is also setting up a US operation in the Olivetti building in Sunnyvale, California.

Acorn sees itself as becoming primarily a design and licensing company, both for its existing intellectual property and for the emerging network computing technology. By licensing its products to other manufacturers, Acorn will be able to receive a substantial royalty income whilst Oracle is able to increase its own software sales worldwide. Oracle predicts that sales of network computers could reach a million units in three years, and web browsers are expected to be available from September.

Stork flies in with portable delivery

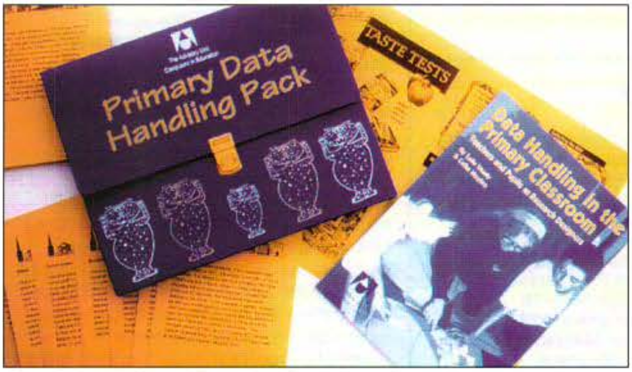
The Acorn Risc Technologies Web page (http://www.art.acorn.co.uk/HOTSTUFF/Home.html) has become very interesting of late, not least because of the appearance of details of a pair of very exciting-looking portable RISC OS computers. These are projected products, and no firm details about price or release dates are available.

The Stork is a colour sub-notebook computer which has a choice of screens: 10.4" TFT LCD at VGA (640x480) or SVGA (800x600) resolution, or a 9.5" 16-greyscale VGA resolution STN LCD screen. It has an inbuilt keyboard with palm-rest and three-button trackerball, 420Mb hard disc, 16-bit stereo sound, type 1, 2 or 3 slot PCMCIA expansion and is based on the 32MHz ARM 7500 processor. The machine can have up to 256Mb of on-board RAM and supports FlashRAM via the PCMCIA card socket. An external floppy drive can be connected, and there is a docking station option. There is a freeze mode which enables the machine to be suspended at any time and returned instantly to the same state up to five days later. The machine is available in sample format.



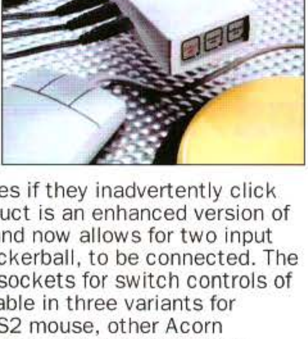
The NewsPAD is in some ways even more exciting, and represents some leading-edge technology. It is a high-performance colour touch-screen tablet-style computer with built-in Internet support. It provides PCMCIA type 2 or type 3 expansion slots and supports both microphone and camera inputs. Based on a 40MHz ARM 7500 processor, the NewsPAD has a 420Mb hard disc, 16-bit sound capture and playback, can contain up to 256Mb of RAM, and has a 10.4" SVGA-resolution active matrix LCD touch-screen displaying up to 32 thousand colours. There is provision for a CCD camera module as well as a bi-directional infra-red link and a docking station connector. There is no keyboard, and the unit is less than 4cm thick. Like the Stork, there is a freeze mode which allows you to return to the machine in an unchanged state after a significant delay. The NewsPAD is also currently available in sample format, but production models are expected by the end of the year. We hope to bring further details of these exciting machines in a future issue of RISC User.

Support for educational database users


Primary Data Handling Pack
TASTE TESTS
Data Handling in the Primary Classroom

The Primary Data Handling Pack from The Advisory Unit: Computers in Education provides ideas, methods and support for teachers and Key Stage 2 pupils who are using databases for their projects. The pack contains sample data files for popular primary databases on Acorn 32-bit, BBC and RM Nimbus computers, together with a teachers' guidebook, Data Handling in the Primary Classroom, and various other resources for classroom use. The pack costs £30 ex. VAT plus £4 p&p. Contact The Advisory Unit, 126 Great North Road, Hatfield, Herts AL9 5JZ, tel. 01707 266714, fax 01707 273684.

Special Needs from SEMERC



SEMERC has released the Mouser 2 and Switch Box for young and special needs users. It is a device which allows mouse buttons to be disabled before a lesson begins so that pupils will not be distracted by accessing extra program facilities if they inadvertently click the wrong button. The new product is an enhanced version of the existing SEMERC Mouser, and now allows for two input devices, such as mouse and trackerball, to be connected. The device also provides three jack sockets for switch controls of the mouse buttons, and is available in three variants for A7000 or PC-compatible with PS2 mouse, other Acorn machines, and for serial mouse PCs, at a price of £49 ex. VAT. For further information contact SEMERC, 1 Broadbent Road, Watersheddings, Oldham OL1 4LB, Tel. 0161 627 4469, fax 0161 627 2381.

Bright pledges to education

The new Acorn-Apple joint venture company has made numerous exciting pledges for the development of IT solutions for schools. Following the initial announcement of the joint venture, there was some concern that Acorn technology would be phased out in favour of Apple-based systems. However, a more recent announcement sounded very much more positive for Acorn devotees.

The new company has pledged to continue selling, enhancing and supporting all current Acorn and Apple ranges whilst uniting the educational expertise of both parent companies and provide support for UK educational software developers. There will be products for both Acorn and Apple machines to allow them to exchange files and share peripherals on a network, and the appearance of software which is common to both platforms will make hardware issues less relevant.

RISC OS continues in development; in fact, as can be seen from the Network Computing-related announcements, developments will continue for areas other than just the educational market. For education, though, there will be two new versions of the A7000, two more flavours of Risc PC, Internet terminals, set-top boxes and a largely rewritten (but functionally identical) version of RISC OS which can cope with the ARM810 and StrongARM chips. For Apple enthusiasts there will be yet more models of Macintosh and the new Copland operating system to look forward to.

In the longer term, machines designed for the new architecture, whose name seems to fluctuate between Common Hardware Reference Platform (CHRP) and PowerPC Reference Platform (PPCRP), will support a StrongARM plug-in card. Such machines will run both Mac OS and RISC OS simultaneously, and the company guarantees that both current Acorn and Apple platforms will continue to be supported into the future.

ANT in Acorn Web deal

ANT looks set to benefit in a major way from Acorn's agreement with Oracle: it has announced that it is developing a version of its Web browser, Fresco, in conjunction with Acorn Network Computing for use in network computer products. Malcolm Bird, head of Acorn Network Computing, described Fresco as "both fast and flexible", and said that it offered "a good starting point and the ability to deliver the features we required". New technologies which will be incorporated into Fresco in the future are expected to be available to users of the ANT Internet Suite for Acorn desktop computers.

What's in a name?

The constituent parts of Acorn seem to be changing by the month, but the group is sounding much more upbeat than it has for quite some time. In an effort to consolidate its different divisions, most of them now incorporate the Acorn name in their titles, with the 'Applied' of Applied Risc Technologies becoming 'Acorn', and Online Media gaining an 'Acorn' prefix. The new names imply a pride in the parent company which the rather apologetic-sounding Acorn Education never quite seemed to convey. The full line-up at the time of writing is therefore Acorn Risc Technologies, Acorn Online Media and Acorn Network Computing, together with Advanced Risc Machines (in which Apple has an equal share - not to mention VLSI - thereby sadly denying the old Acorn Risc Machines title) and the new Acorn-Apple joint venture which is as yet unnamed.

More limbs for ARM

ARM has licensed the ARM7TDMI core, with its Thumb compact program code operating mode extension, to Alcatel Mietec, a subsidiary of Alcatel Telecom. Mietec's study of all embedded processors on the market found that the ARM was 20 to 30 percent better in benchmark tests than the rivals, which included MIPS, SPARC, Intel and Motorola products. Mietec will be using the ARM core for the development of ASICs which are intended for use in advanced industrial, automotive and communications applications.

Knuckling under

Following the success of the StrongARM partnership, ARM Ltd has entered into a further joint venture with Digital to produce the Knuckle, a new extension to its range of processor cores. The Knuckle sits alongside the Thumb in ARM's product range, providing an ultra-compact 4-bit program code operating extension. Based on StrongARM technology, the Knuckle promises to pack a real punch, and its exceptionally low power consumption opens the door for use in potential wrist communication devices. Net users can finger status@armltd.co.uk for further information. Coincidentally, full-scale production of the first Knuckle joint venture processor, the KO-1, will begin at the same time as

New Northern Spring Show

In the absence of an Acorn User Spring Show in Harrogate this year, the Wakefield Acorn Computer Group has organised a replacement event. The Wakefield Acorn Spring Show will take place on Sunday 19th May at an hotel just outside Wakefield, and will be open from 10am until 5pm. The address of the hotel is Cedar Court Hotel, M1 Junction 39, Denby Dale Road, Calder Grove, Wakefield WF4 3QZ. Drivers should leave the M1 at Junction 39 and take the A636 to Denby Dale. Cedar Court is 100 yards on the left. Although this will be a smaller and 'cosier' event than the Harrogate Show, many significant exhibitors have signed up already: 35 so far, including many big-name companies such as Acorn Risc Technologies, Clares and Computer Concepts.

New X terminal from Acorn

Acorn has replaced the Risc PC600X Unix machine with a similar variant of the Risc PC700. The 700X has the same specification as the ACB75 (8Mb DRAM, 2Mb VRAM, 850Mb hard disc) and is supplied as standard with a 17" monitor and a 10base2 or 10baseT Ethernet card. The machine is bundled with Gnome Computer's X server software and Acorn's TCP/IP suite. The server will run X at up to 1280x1024 in 256 colours, 1024x768 with 16-bit colour, and 800x600 in 32-bit colour, allowing multiple sessions and multitasking alongside RISC OS if needed. With an RRP of £2668.15 inc. VAT, the 700X offers impressive value for money compared with more traditional X terminals. The 700X is an X client, not a complete UNIX system; it needs to be connected to an X network to be of any real use. Those interested in Acorns running a full-blown UNIX system should instead be looking at RiscBSD (http://www.ph.kcl.ac.uk/~amb/). Contact Acorn Education on 01223 254254 or email tertiarysales@acorn.co.uk for further information.

NEWS IN BRIEF

Educational software company H. S. Software, which has been developing Acorn software since 1983, now has a site on the Acorn Cybervillage. The site contains screenshots and demonstration versions of the company's products. Point your Web browsers at http://www.cybervillage.co.uk/acorn/hssoftware/

Another small Acorn software house has sprung up: Grasshopper Software's first release is a file protection utility called Encode, which provides data security for locations where there is a risk of illegal copying, such as in schools, businesses and on the Internet. For further details contact Grasshopper Software, 6 Truro Close, East Leake, Loughborough LE12 6HB.

The review of Quantum Software's *Impressive* in RISC User 9:3 quoted an incorrect price. The actual price of the software is £15.95 (fully inclusive). We apologise for this error.

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INTELLIGENT
INTERFACES

What's Cooking at Acorn Online Media

Alan Wrigley lifts the veil on Acorn's rising star and finds a company hard at work redefining the future

Back in the summer of 1994, I was at Acorn House for a press briefing. During the course of the meeting, a little black box was brought into the room and connected to a television set in the corner. What happened next took me completely by surprise: I was given my first taste of interactive television. Like most people outside Acorn, I had absolutely no idea that the company was working on such a project, and I was astounded by the scope and possibilities of this new venture. Those of you who remember the article I wrote about it in RISC User 7:9 will also remember that I had to stop myself getting carried away with enthusiasm.

Nearly two years on, the Internet has captured the public's imagination and the idea of connecting to online services via a screen and telephone line is no longer seen as a highly specialised activity of little use to ordinary people. Olivetti and others have produced PCs which are designed to be used with the TV set in the living room and connect to the Internet; companies such as Viewcall have announced services which combine Internet access with localised interactive services; and more recently Oracle has created waves in the computer industry with its public commitment to the network computer - a project in which Acorn is involved in a big way, as described in the News pages in RISC User 9:3. In the midst of all this activity, Online Media has steadily pursued its objective of using its Cambridge trial to prove the viability of interactive television.

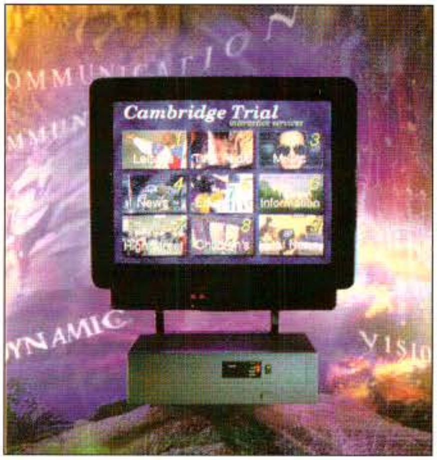
I will look more closely at all these competing technologies and services in a moment. But first, what is Online Media and what is it doing?

In the beginning was the world

For some time before anything was made public, Acorn had been looking at and evaluating a number of possible scenarios for the future of computing. It was felt that interactive television was an ideal match for Acorn's skills and technology - in particular the availability of ARM processors to power a consumer product that would be cheap to manufacture, and anti-aliasing techniques which could provide a high quality display on an ordinary TV set.

Cambridge goes on trial

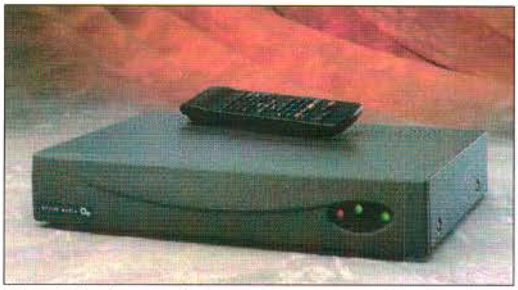
Following conversations with a number of organisations including BT, in July 1994 Acorn stunned the world (well it certainly stunned me) by announcing the formation of a sister company, Online Media (OM), and the establishment of a trial service in Cambridge, which began in October of that year. OM's partners in the trial were Cambridge Cable who supplied the service to a small number of its cable customers, ITN who provided television news services, Anglia TV who supplied material from their own television resources, as well as ARM and ATML who produced the processor and communications technology respectively. Oracle were involved to the extent that support for their New Media software was an important part of the specification for the STB.



The essential elements of the trial service were a central server to store data such as music, video, shopping catalogues, educational material and so on; a network of ATM (asynchronous transfer mode) switches to route the data to and from customers via the cable network; and a set-top box (STB) in the home of each customer. The original STB was basically a re-boxed Risc PC without disc drives (and the box re-appeared later after a coat of paint as the A7000).

The highways and the byways

At this point it's worth digressing a little and considering the technology involved and how it differs from other online services such as the Internet and Viewcall. All of them are geared towards the concept of data being transferred to and from servers and clients, thus



The set-top box mark 2

providing fully interactive capabilities for those using the networks, but the technology employed in each case has a significant effect on the kind of services which can be operated.

The Internet, as most of you will know, is a global network of computers. The core of the network is a high-bandwidth backbone, which feeds lesser networks until at the user's end most connections to the Internet are made via a standard domestic telephone line and a modem with a maximum speed of 28,800 (or in a few cases 32,000) bits per second. Although you can send and receive any kind of data via the Internet - full-colour graphics, CD-quality audio, MPEG video - the effect of the limitations of the phone line and the modem speed, together with the huge demand on servers from the enormous number of people using the network at any one time, makes it difficult to view or hear the data in real time (although a form of real-time audio capability is beginning to emerge). Internet-based fully interactive services are therefore out of the question until the technology available to the ordinary consumer has improved by an order of magnitude.

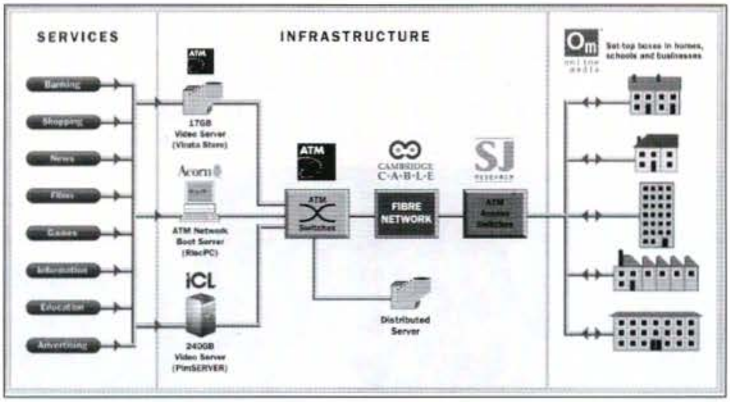
Viewcall has improved on this situation by using a proprietary fractal-based compression system that is claimed to be much faster than conventional methods of transferring graphical data. Although the Viewcall service is based around the Internet and the use of ordinary phone lines, this makes it somewhat more suitable for image-intensive services, though it still doesn't have the bandwidth to offer things such as video-on-demand. Also, an important part of Viewcall's service is a substantial local element. Local shops and services will be able to conduct interactive shopping via the network, and since all the traffic between client and server will be localised, it will not be affected by any overload elsewhere on the Net.

The Cambridge iTV trial, however, is fully interactive in real time. The trial has its own dedicated fibre optic network overlaid on Cambridge Cable's infrastructure, and as I mentioned earlier, the whole network is based on ATM technology. One of the crucial points about ATM is that it provides a guaranteed level of service, unlike networks such as Ethernet, for example, where the speed may vary depending on the load. As a result, data can be transferred reliably around the network at 100Mbits per second and transferred to the STB at 2 Mbits/sec - enough to relay CD-quality audio or MPEG1 full-motion video down the line. ATM technology is also used at the server end to ensure that data comes out of the store fast enough for many different subscribers to access the system at the same time.

My own view is that over the next couple of years all these technologies will converge. The huge increase in Internet users (growing at over 100% per annum globally) will necessitate a major re-think of how the network is expected to cope with the demands put on it, while at the other end the spread of fibre optic cable will put high bandwidth connections within the reach of more and more people. Eventually the two will meet in the middle, quite probably pulling in other technologies along the way such as video conferencing.

The Cambridge trial has provided a few lucky families with interactive television in their homes

In the UK I foresee local cable companies setting up Online Media-type services complete with Internet access. Users will have full interactive television services locally, and probably also nationally via high-bandwidth links between providers. International services will be available via the Internet, and initially the providers will maintain large proxy servers as they do now for the World Wide Web, though in the future these proxies will hold substantial amounts of video and audio data from the more popular sites around the world. Users will then be able to access these as though they were being served locally, e.g. you will be able to view a video from the other side of the world in real time. This kind of service will allow active real-time participation in local services coupled with passive real-time access to remote services.



A schematic of the trial infrastructure

Service with a smile

Getting back to the Cambridge trial, in its earliest days it was mainly just a testbed for the technology, and the actual content was almost an afterthought. Luckily the ten initial customers were not expected to pay for the service! As it progressed, and technical hitches were ironed out, new content providers were signed up to form a 'Service Nursery', and ICL was brought on board to provide some beefy server technology. Around the same time a purpose-built mark 2 version of the STB was produced, still with the same RISC OS-based functionality but with a smart new design and an ARM 7500 on board.

Early indications that the trial was proving successful were reinforced in February 1995 when Acorn announced that it was to raise £17m on the stock market via a rights issue, the majority of which was to fund investment in Online Media. There appeared to be no shortage of City investors willing to back Acorn's judgment that this was a good bet for the future, and the money was raised without a hitch.

By the middle of last year, companies involved in the nursery included the BBC, NatWest Bank, Tesco, The Post Office, and the advertising agency BMP DDB Needham, as well as the original providers such as Anglia and Acorn. This provided a framework for the kind of services that interactive television was designed to supply: home shopping and banking, radio and TV programmes, education and information services etc. Later in the year they were joined by IPC Magazines who are planning to launch the world's first interactive TV listings guide. All these companies are anxious to explore the possibilities for interactive services in a controlled environment to assess the potential for future developments in this area. This effectively makes the point that the trial is not just about the technology but about content and services as well.

At the time of writing, the trial has 100 homes, 8 schools and 3 businesses connected. Some of these have recently had access to Teletext and shortly also the World Wide Web as part of the service (including video and audio browsing via HTML documents), to enable the trial partners to assess the way in which these services can complement each other, and to look at the question of performance and ease of use. This echoes my comments earlier about the convergence of the various forms of digital highway that will be available during the next few years. Opinion pollsters NOP have joined the trial to help in assessing feedback on these issues, and also the Independent Television Commission has become involved in order to explore in particular the issues relating to localised television services. Smaller companies are being attracted to the service nursery.

Take your partners

Right from the start, the aim of Online Media has been to collaborate with partners who can provide the company with expertise in one area or another, and to ensure that the technology is suitable for the widest possible range of environments and is compatible with existing and emerging standards. The STB was designed to be usable with virtually any type of network technology and all common comms protocols - indeed the Viewcall set top box was designed by OM and is based on its own STB, and the same technology is going into Oracle's network computer. On the software side, Macromedia Director, one of the most widely-used multimedia authoring systems, is supported.

Acorn's association with Oracle is another example of working in partnership, and goes back a lot further than the announcement earlier this year of the network computer development. OM is a member of Oracle's Set-Top Alliance, which is a group of over 50 companies working in the field of interactive TV who are concerned with the issue of compatibility. The aim of the group is to provide an environment in which content developers can produce multimedia applications that will run on multiple STB platforms. Hopefully this approach will prevent a repetition of the VCR format wars or the rise of a monopoly such as Microsoft.

A factor which is coming increasingly to the fore in the brave new world of online access is the question of security of data and copyright. In the old days, before cheap scanners, digital cameras and powerful computers, copying printed material was a job for the dedicated professional, and even then it would never look as good as the original. Today, when so much data is in electronic form from the start and can be downloaded easily onto any computer in the world, abuse of copyright is rife and is a factor which must be taken on board by anyone who wishes to publish multimedia material on a broadband network. The Berne Convention on International Copyright Law has addressed this issue, and various interested parties have set up working groups.

As far as OM is concerned, since the first versions of the STB at least are discless, the question of direct electronic copying doesn't arise. However, video material could be recorded on a VCR, and to counter this, OM has licenced protection technology from a California company called Macrovision, which should effectively prevent this.

All the world's a stage

As well as the Cambridge trial, there are a number of other interactive television trials going on both in Britain and around the world. Some of these have already fallen by the wayside, and others look set to do so since they are based on outdated technology. Right from the start Online Media has had the edge on most others in the field as a result of low-power low-cost ARM processors and the use of fully digital technology; however, the company is keen to stress that the Cambridge trial is not to be seen as a competitive environment, but a framework for cooperative participation. We can certainly hope that a spirit of cooperation will rule in the information age, but equally it's hard to escape the assumption that Acorn and OM would dearly love their technology to be at the heart of things, and that other companies will be fighting tooth and nail towards the same objective.

And things could look good for for OM. At least four other trials are using its technology, and others all around the world are looking at it with interest. I have already mentioned Viewcall, which is using OM-designed STBs for its own trial service in Glasgow and has commissioned further STBs for similar services in Europe and America. Another UK trial involves Digital Equipment Corporation - yet another powerful company with strong links with Acorn, as a result of the development of the StrongARM processor. We reported in RISC User 8:5 about a deal between OM and DEC to swap STB technology for server expertise, and the first fruits of this partnership emerged in Westminster Cable's Superstar trial. Unusually this trial aims to provide interactive television services without a set-top box, and OM's involvement is to supply STB functionality in an STB-less environment by incorporating it into the fabric of the network itself.

The other two OM-based trials have already been reported in RISC User. These are the Northern Telecom trials in Europe and America, and the Lightspan Project, which aims to put STBs into schools and homes throughout the USA (one of the companies involved in Lightspan being Microsoft).

The future's bright, the future's online

Interactive services is a brave new world where there is everything to play for - no-one has established a dominant position of any kind and the potential market for those companies that succeed could be enormous. It's hardly surprising, then, that Online Media is playing its cards close to its chest and not giving away too much about its future plans.

Oracle's Network Computer is seen as an important landmark on the route towards the holy grail of the information superhighway. OM sees the current drive towards Internet access as the first step in a progression from narrow band to broad band services, particularly as the Web provides an ideal environment to explore the concept of multimedia information services at very low cost. Since Acorn has a foot in both camps by virtue of Online Media at one end and its involvement in the design of the network computer at the other, it is ideally placed to help companies make that progression.

If you are tempted to jump on the bandwagon, for a cool £50,000 or so you can be the proud owner of an Online Media development package. For your money you'll get a couple of Risc PCs, four STBs, a small server and all the necessary networking software and hardware to run your own mini ATM-based interactive network. OM has already sold a number of these both to companies involved in the trial and to other interested parties.

Acorn may have had a hard time of late in its traditional desktop computer market, but in terms of its potential to fulfil the needs of future markets I believe the company has never had a brighter future. Online Media was the first manifestation of this transformation, and we will hear plenty more exciting news from this quarter over the next few years.

A Professional in the Studio

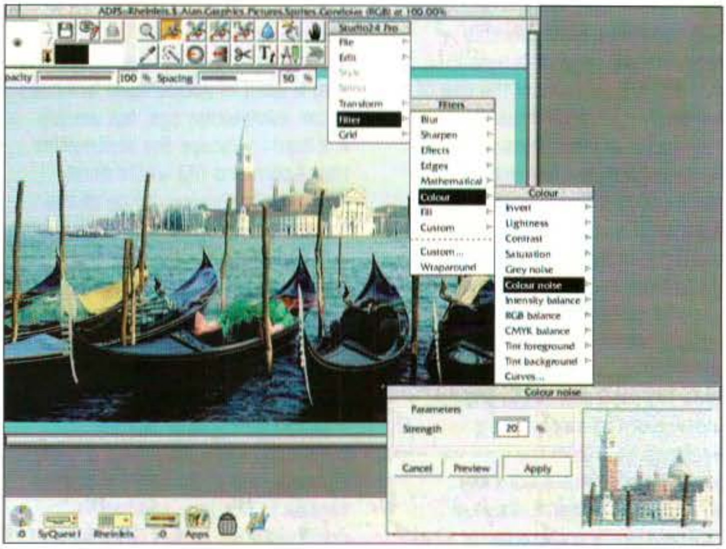
Alan Wrigley reviews Studio24Pro, the latest version of Pineapple's graphics package

The first release of Pineapple's *Studio24* was reviewed in RISC User 7:9. Since then the package has established itself as one of the more popular image processing applications on the RISC OS platform. A second version has been eagerly awaited for some time, having first been previewed at Harrogate almost a year ago.

The new version, called *Studio24Pro*, has a number of very significant improvements over the original. Many of these are remarkably similar to features of the new *Photodesk Pro* (see last month's review). Firstly, virtual memory is now implemented. The lack of this feature was one reason why Studio 24 was always considered less suitable for serious professional use than Photodesk, even though many of its other features were said to equal or even surpass those of its rival.

Secondly, the concept of *channels* has been introduced. This enables the primary colours of an image to be edited independently (for example in RGB mode the red component could be edited while leaving the others untouched); and it also allows full 8-bit masks to be created by assigning new channels for that purpose. As well as RGB channels, you can also have CMYK ones, allowing you to produce colour separations from your image.

The third major enhancement concerns the way in which various elements of a picture can be manipulated. Bit image files can be loaded into an existing image, and moved around or scaled before being 'fixed' into the picture. Even more powerful is the ability to load and also create Draw files (and text) and manipulate them in the same way before integrating them into the image. This allows you to create masks as Draw objects with a high degree of accuracy by moving control points until the positioning is exact, as opposed to the more usual method of drawing the mask directly onto the picture, where if you get it slightly wrong the only way to alter it is to undo it and start again.



Strength 20 %

Figure 1. Editing a picture in Studio24Pro. The dialogue box at the bottom shows the Preview option (in this case, the application of colour noise).

To round off the most important features of the new version, the array of filters has been increased, and the effect of each can be previewed on a small section of the image before being applied. Among the filters is a powerful fractal texture generator which looks almost identical to that in Photodesk Pro (and indeed the Photoshop add-on, from where the idea has obviously originated).

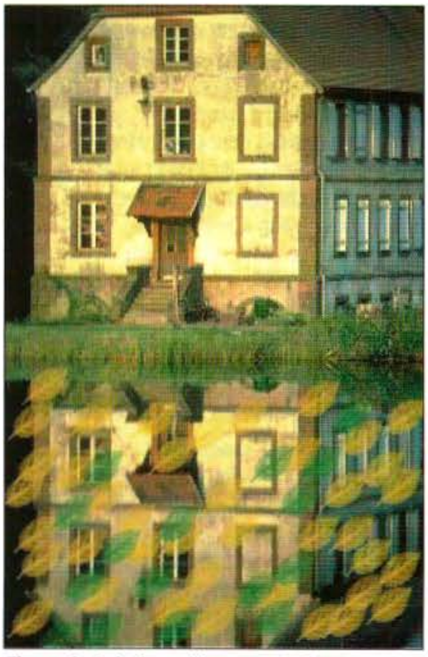


Figure 2. Painting with a user-defined brush in the shape of a leaf.

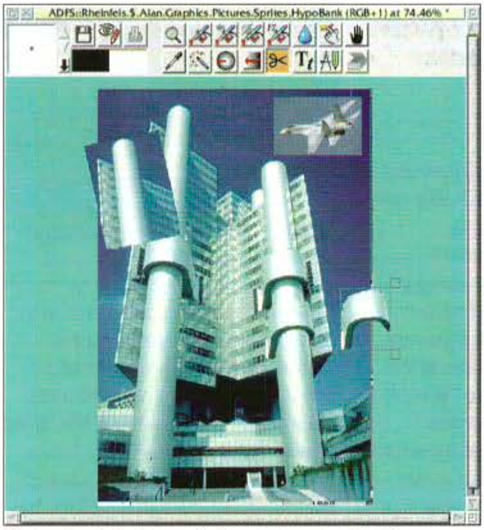

ADFS::Rheinfels.$.Alan.Graphics.Pictures.Sprites.HypoBank (RGB+1) at 74.46%

Figure 3. Using the clipboard to redesign the Hypobank building in Munich. The plane has been imported onto the clipboard as a JPEG file, the object at the top left has been cut out and rotated, and the extra 'clamp' on the right-hand pillar has been added by copying a section of the picture (seen selected on the right) and pasting it onto the canvas.

Off to work

To start work with Studio24Pro you either open a new canvas to the size you specify, or you can import a TIFF, Clear, JPEG or sprite file. The default filetype for saving images is an enhanced form of TIFF which allows channel information, including masks, to be saved with the image. You can also export JPEG, Clear, PBM or sprite files.

As I mentioned above, you can also drop a file onto an existing picture. The new image 'floats' above the existing one and can be moved, rotated and scaled before it is permanently fixed in place. The merge can be done at a specified opacity setting, so you can achieve 'ghost' effects quite easily.

The mechanism by which this is done is a very powerful feature of Studio24Pro, namely the clipboard. It's a little difficult to explain in words how this works, but imagine that there is a floating layer above your image, which contains objects such as other files which have been dropped onto the canvas, and sections that you have copied from the main image (or from other images) to the clipboard using the *Cut* tool. By clicking on the *Clipboard* tool, you can view these items superimposed on the main picture. They can be manipulated individually, and then transferred to the picture when you are ready to do so. Transferring a clipboard item doesn't remove it from the clipboard, so you can re-use it elsewhere. You can have as many items as you like on the clipboard: adding new ones doesn't wipe the contents as it does with many other packages.

Not only this, but you can even edit clipboard items as images in their own right on a separate canvas, and the changes will be reflected on the clipboard over the main canvas - a kind of incestuous OLE, if you like.

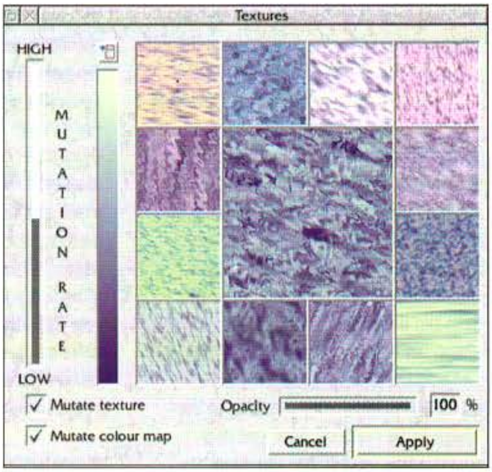
Brush up your technique

The standard brush tool has a wide range of brush types and sizes built in (with anti-aliasing available as an option on each), and you can also edit the existing brushes or create new ones from a 256-level grey sprite of your own design. Figure 2 shows the results of using a brush I designed from a picture of a leaf. I was able to just dab on a faint copy of the leaf wherever I wanted - much easier than having to clone it each time. As with all the tools, the brush has an opacity setting which determines the density of the colour applied, and a spacing setting which dictates how closely the brush follows the pointer. The lower the setting, the more it lags behind the pointer and the smoother the curves. On a really low setting, you can draw freehand lines with very fine control. Another nice touch is that if you hold down Shift, a straight line is drawn from the previous point to where the pointer is now located.

In addition to the standard brush, there is an *Undo* brush which allows you to selectively undo any section of the picture, and a *Clone* brush which clones part of the image elsewhere on the canvas. You can even clone from one canvas to another. The fourth brush tool is an *FX* brush, which enables you to paint using any of the filter effects which I will describe in a moment.

Colour selection is from a standard RISC OS 24-bit colour picker, and you can define both a foreground and a background colour, one of which is applied by the Select button and the other with Adjust. You can name any colour to make it easy to select next time you need it, although I would have preferred to be able to select from an array of colours in a palette as you can with Photodesk. You can also pick up any colour from the canvas using the *Picker* tool.

Other tools available from the main toolbox are *Smudge*, which as its name suggests smudges the canvas as if you had smeared it with a finger, and *Wash*



☑ Mutate texture

☑ Mutate colour map

Opacity 100 %

Figure 4. Some of the wonderful patterns that can be created by the texture generator. Ever wanted to be a lino designer?

which blends the transitions between adjacent colours, enabling you to smooth one object into another, for example after merging objects from the clipboard. There are both radial and linear fill tools, and a magic wand, which unfortunately doesn't seem to be as powerful as its counterpart in Photodesk. Whereas the latter can be used to apply effects both locally and globally, making it a general purpose application tool, Studio24Pro's magic wand only operates locally, and it can only fill areas on a different channel from the one which is providing the shape of the fill. This really makes it useful only for creating masks from shapes in the picture.

Drawing the line

For drawing geometrical shapes, the complete functionality of Draw is built into the package. This makes it slightly more fiddly to draw, say, a simple rectangle than with Photodesk, since you have to first draw the shape on a separate layer of the picture, then transfer it onto the canvas. However, this approach opens up the possibility of amazing flexibility. You can edit shapes just as you would in Draw, you can use the shape to copy out a section of the image to the clipboard, you can convert the shape to a brush stroke, and once the shape has been created it remains floating on the Draw layer, where you can use it over and over again in different positions. Text objects can be created in exactly the same way, and have the same properties as Draw objects.

This versatility makes the creation of accurate masks much easier than on some other systems. First of all you create a mask channel if there isn't one already, and then you can use the Draw or text tools to create a shape which exactly matches the required mask. Because the Draw object is separate from the image until fixed in place, if the shape isn't quite right the first time, you can edit the control points until it coincides exactly with the area of the image to be masked. Now you can transfer this shape onto the mask channel (by choosing to write to that channel only) and then revert to full channel editing to use the mask. Because masks now have 8 bits, you can have varying degrees of transparency through the mask.

Filtering through

The wide range of filters and textures can be used in two ways. Firstly they can be applied to the whole image by choosing the required effect from a menu. Each effect has its own dialogue box with any required parameters, and also a preview window in which you can test out the effect on a small part of the picture before committing it to the whole canvas. Unfortunately this is a slow process if you are short of memory, since a copy of the picture is made to enable the preview, and I found on my system (a 9Mb Risc PC) that this usually involved the use of virtual memory. Having said this, the virtual memory manager on the whole seemed reasonably fast; I did a simple speed test against Photodesk and the results were almost identical.

The second method of applying filters is to choose the FX brush and then select a filter as before. Now the effect can be brushed on wherever it is wanted, making use of the opacity setting if required.

The filters include blur (several types), sharpen, emboss, bas relief, pointillize, edge enhancement, mathematical functions and colour manipulation. Some of these can be customised by designing your own matrix. The most spectacular of the filters, however, is the one labelled *Textures*. This is a fractal texture generator along the lines of the famous Kai's Power Tools Photoshop plug-in. Using this tool you can create the most wonderful range of textures (see figure 4), which are ideal for filling areas, making backdrops for the desktop or for Web pages, texturing text and so on. Again, though, if you don't have a lot of memory your hard disc will do a lot of churning since each time you instigate another round of random generation, several large image files are created.

Conclusions

So it's down to the nitty gritty: is it any good? Well, yes it is. I've been using Photodesk a lot over the last year, and it took me a little while to get used to Studio24, but once I had fathomed out how to do things, I found it to be a nice piece of software. I feel that it falls behind Photodesk in two areas. Firstly, I really like the way that in Photodesk you can use literally any tool with any effect. This gives an incredibly powerful flexibility to the way you work, and although you can probably achieve most of the effects equally well in Studio24, it is not as intuitive to use. Secondly, the magic wand in Photodesk really is magic - the sort of tool you find yourself using all the time as a general purpose applicator. Studio24Pro's wand is nowhere near as powerful.

Studio24Pro

Supplier	Pineapple Software Suites 13 & 14 South Park Business Centre 310 Green Lane Ilford IG1 1XT Tel. 0181 599 1476 Fax 0181 598 2343
Email	sales@pineaple.demon.co.uk
Price	£125 ex VAT

On the positive side of the equation, Studio24Pro's Draw facilities and clipboard provide powerful facilities of their own which Photodesk can't match. And Pineapple's offering is considerably cheaper than the latest version of Photodesk.

I do have a couple of minor niggles: I suffered the occasional fatal crash while working on an image, though this problem is by no means restricted to Studio24 - it's wise to save your work regularly whatever software you're using. And parts of the program seemed a little slow; for example, it took 5 minutes to load a Base resolution PhotoCD file (as opposed to 12 seconds in Photodesk).

Most serious artists use more than one package, and transfer images between them to make use of the best features of each. I certainly value the extra features of Studio24Pro, and would find it hard to do without them now I know they exist. And if you can only afford one package, then this one is excellent and will serve you very well.

DTP Workshop

Keith Parker concludes his roundup of desktop publishing packages by looking at the professional contenders

We are concluding our review of the major DTP packages this month by looking at the professional end of the range; namely *Impression Publisher* and *Publisher Plus*, together with some first impressions of a new contender in this market segment: Beebug's *Ovation Pro*.

Impression Publisher

Impression Publisher was launched to replace Computer Concepts' *Impression II*. It is very similar in appearance to *Impression Style*, which we described last month, and it is an excellent word processor, but with improved graphical support over Impression Style. It comes with the same supplementary packages as Style (namely table and equation editors, the *WordWorks* dictionary and thesaurus, and various lesser items such as clip-art). Users upgrading from Impression II and Style will find it very easy to get used to Publisher.

Publisher will run from floppy disc, but it is recommended that you install it on hard disc, where it requires 4.3Mb of free space for a full installation. It will run in 2Mb of RAM, though 4Mb is advisable, and all versions of RISC OS are supported, though RISC OS 3.1 or greater is recommended.

Publisher contains all the features of its junior stable-mate, Style (see the March issue of RISC User). In terms of the ease of use of text, graphics and printing facilities, the following is an overview of what the professional user gets for his money. The text handling is superb and adds the following:

* **Smart quotes** (see figure 1): this feature provides true 'sexed' quotes to give your documents a professional edge and appearance. The automatic entry replaces the old way of typing Alt-144 and Alt-145 to get true opening and closing single quotes, or Alt-148 and Alt-149 to get true opening and closing double quotes.

"Sexless double quotes"
“Sexed double quotes”
'Sexless single quotes'
‘Sexed single quotes’

Figure 1. Sexed and unsexed quotes.

* **Word count**: originally available only in Publisher Plus, this feature has been introduced with the latest version of Publisher. It simply counts all the words in the document or selection.

* **Compile font usage**: this utility scans your document and creates a separate document which details what fonts (and weights) it contains. This is useful if you take your document to another machine which may not have the same fonts available; or if you are sending your file to a bureau, they need to know which fonts have been used or else they charge you extra!

The page layout options, though still limited, are improved by the addition of:

* **Irregular graphic frames** (see figure 2): if used sensibly and with restraint, these can add greatly to the appearance of a document.

* **Duplicate frames**: this is an implementation of step and repeat, which allows you to draw a frame and choose the number of copies and positions required: this is quicker, easier and more accurate than using copy and paste.

* **Bleed** (see figure 3): if you want to print right to the edge of the page, you need to specify 'bleed' (normally 3mm, which is the right amount in most cases). Why do you need bleed? On a normal home- or office-based printer it is not something that you would normally expect to use, but for printers which use over-sized paper, this is how printing can go right to the very edge of the paper. The bleed area is an additional border around the page which is trimmed off after printing on oversize paper, allowing objects on the page to flow off the edge of the paper. Bleed is set in the Master Pages dialogue box, and it is recommended that any bleed required is set before

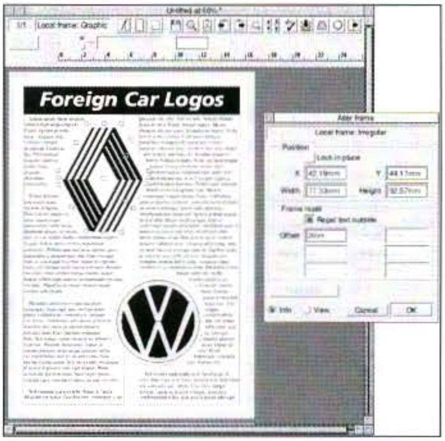
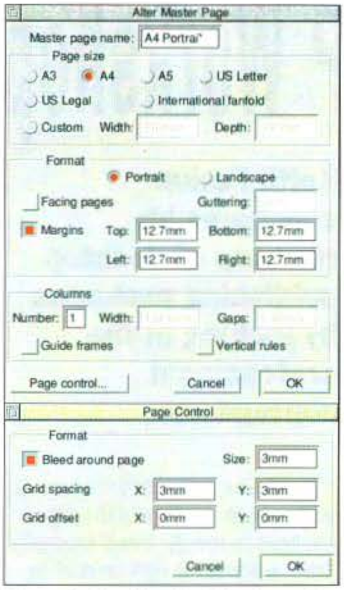


Figure 2. Irregular graphic frames in Impression Publisher.



Alter Master Page

Master page name: A4 Portrai'

Page size: ○ A3 ● A4 ○ A5 ○ US Letter ○ US Legal ○ International fanfold ○ Custom Width: Depth:

Format: ● Portrait ○ Landscape

☐ Facing pages Guttering:

☒ Margins Top: 12.7mm Bottom: 12.7mm Left: 12.7mm Right: 12.7mm

Columns: Number: 1 Width: Gaps:

☐ Guide frames ☐ Vertical rules

Page Control

Format

☒ Bleed around page Size: 3mm

Grid spacing X: 3mm Y: 3mm

Grid offset X: 0mm Y: 0mm

Figure 3. Creating the bleed area in Impression Publisher.

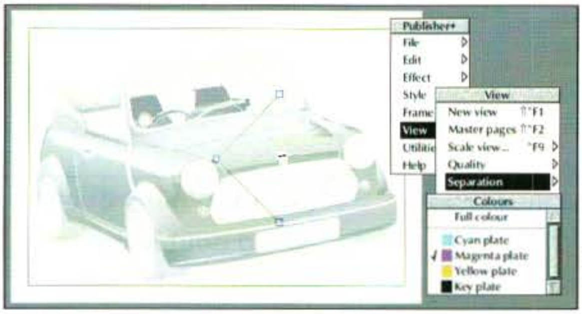
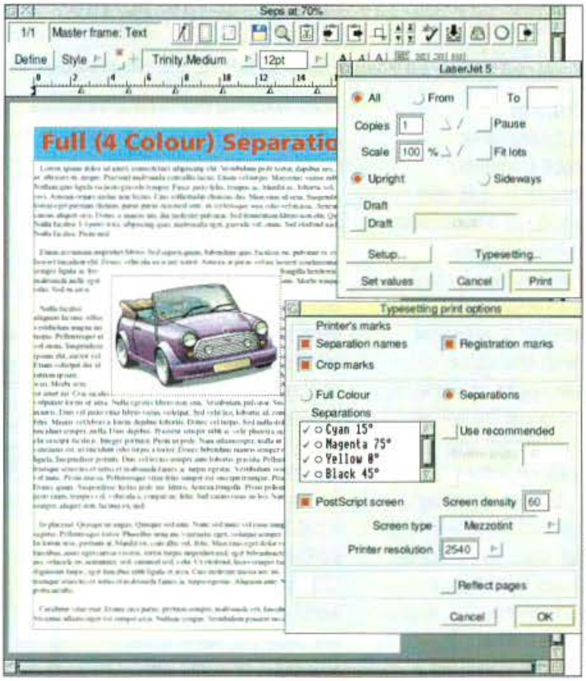


Figure 4. Checking the CMYK separations in Impression Publisher.



LaserJet 5

● All ○ From To

Copies 1 ☐ Pause

Scale 100 % ☐ Fit lots

● Upright ○ Sideways

Draft: ☐ Draft

Typesetting print options

Printer's marks: ☒ Separation names ☒ Registration marks ☒ Crop marks

○ Full Colour ● Separations

Separations:
✓ ○ Cyan 15°
✓ ○ Magenta 75°
✓ ○ Yellow 0°
✓ ○ Black 45°

☐ Use recommended

☒ PostScript screen Screen density 60

Screen type Mezzotint

Printer resolution 2540

☐ Reflect pages

Figure 5. Setting the typesetting options in Impression Publisher.

you start composing your work; depending on what you are trying to achieve, retrospective changes in Impression Publisher (and Plus) Master Pages can be somewhat difficult and unreliable.

The already good controls over printing are extended with:

* **View separations** (see figure 4): this extremely useful feature allows you to view the document as if it were printed on its component colour plates: Cyan, Magenta, Yellow and Key (black). It allows you to check, for example, that your text has been created in 100% K (from the CMYK palette) rather than as a composite of RGB (Red, Green, Blue). This is a common problem which results in black text appearing on all four plates, resulting in registration problems, rather than just the one plate which is actually required.

* **An extended Print dialogue box** (see figure 5): this controls exactly which plates are printed, whether you require features such as crop marks, registration marks and separation names to be printed, and allows the screen angles to be changed. The latter is vital for printing tee-shirts, for example, as the normal 0° screen angle of yellow ink makes the printing fail to appear on tee-shirt material. Incredibly, it was only with the arrival of the Apple PowerMac that *QuarkXPress* (the world's leading DTP package) allowed the screen angles of colours to be altered to allow printing on unorthodox materials!

Impression Publisher Plus

Impression Publisher Plus was launched as an upgrade to Publisher with the following extra features:

* **Encapsulated PostScript (EPS) and Desktop Colour Separation (DCS) file import**: these are graphics files commonly found on other platforms and used in Macintosh-dominated imagesetting bureaux. The world's leading DTP packages support these file types, so it was vital that the flagship Impression package should match them. Scans are created on a Macintosh and are generally exported as CMYK TIFF files or in EPS/DCS formats and dropped into a blank frame as usual.

* **Open Pre-press Interface (OPI)**: OPI is popular on other platforms, and the principle is simple: scans,

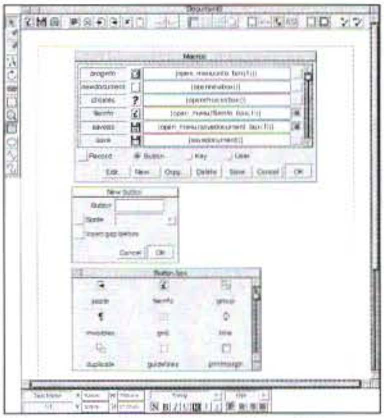


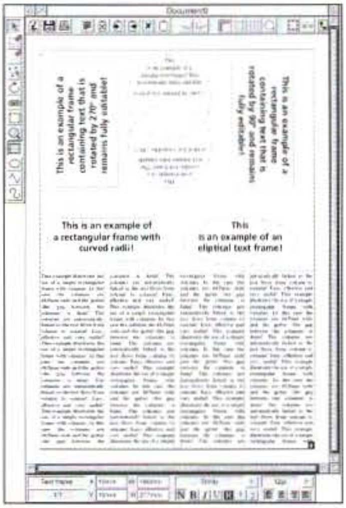
Figure 6. Ovation Pro's configurable button bars.

particularly when they are A4-sized and in full 24-bit colour, can be huge (often as much as 20Mb or more), and moving them around presents problems. To use OPI, you take your picture to a bureau, which scans it and creates 2 versions: one high resolution and one low resolution. You take away the low resolution copy, crop it, rotate it and position it in your document as necessary; and when you take your file back to the bureau for imagesetting, the low resolution version is replaced with the full-blown high resolution version.

* **Named colours**: colours can be applied locally like text effects, or given names and used in several places, like text styles; in the latter case, editing a named colour will change all occurrences of that colour within a document.

* **Spot colours and tints**: in addition to normal ('process') colours, special spot colours and tints can be defined. Whilst the standard printer's model of CMYK is adequate for the majority of cases, there are times when more specific colour options are useful. It might be that you wish to create a colour just for use in headings within a basically black and white document, for example. Without spot colour support, this one colour may require four plates to be created (at your expense). However, using a spot colour means that you can do the same using only two plates (a 50% saving). Tints provide shades which are defined as a percentage of another base colour. If you edit the underlying colour, any tints which are based on it will also change.

Overall, Impression Publisher and Plus are still the preferred options for Acorn DTP professionals as they support four-colour separations and a wide range of graphics importation options. The packages are only let down by relatively poor page layout tools.



This is an example of a rectangular frame containing text that is rotated by 270° and remains fully editable!

This is an example of a rectangular frame containing text that is rotated by 90° and remains fully editable!

This is an example of a rectangular frame with curved radii!

This is an example of an eliptical text frame!

Figure 7. Ovation Pro's flexible text frames.

Ovation Pro

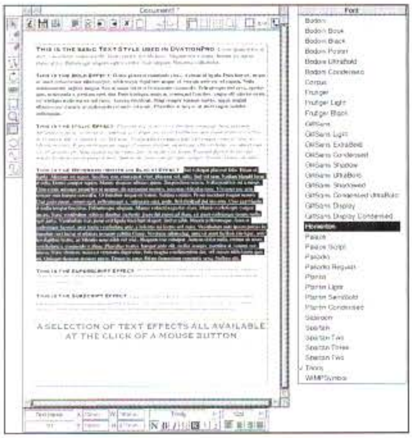
In the interests of impartiality, it has always been RISC User policy not to conduct reviews of Beebug products. However, Ovation Pro is such a fundamentally important package that it would be unreasonable not to give it coverage in a practical series such as this, and so we will be breaking slightly with tradition regarding this product. What follows is an overview of what we can expect in the initial release, and how it has improved upon the original Ovation.

In the first release, Ovation Pro will require RISC OS 3.1 or greater, a hard disc with 5Mb of free space for a full installation, and 4Mb or more of RAM. The second release plans to introduce a version which is capable of operating with limited functionality in 2Mb of RAM.

In last month's article I mentioned that the original Ovation is the only DTP package without a button bar; well, Ovation Pro positively sprouts them! There are three, and all are configurable to greater or lesser degrees. The top button bar is the one with the most configuration options (in fact, without spending any time designing icon sprites or writing macros, it is possible to have 82 preset buttons!), and it sets up single-click buttons for many functions such as Save, Print, Cut, Undo/Redo and so on. The bottom Info Palette is context-sensitive, and lets you edit text, graphic and frame attributes. Finally, a toolbox attached to the left-hand side of the main window provides drawing options, from which you can choose from rectangles and ellipses, straight or curved lines, edit the path of the lines, rotate objects, etc. It works closely with the Info Palette (figure 6 gives an indication of the wide range of options available from the button bars).

Page layout in the original Ovation was good, but now it is even better. The numerous improvements include elliptical frames which support both rotated graphics and rotated text, rectangular frames with curved corners, frames that can include definable text columns, and enhanced drawing tools. Figure 7 shows examples of the improvements.

Text handling has had a major overhaul, too. In the original Ovation, we found that although one could create excellent effects, it was not easy! In Ovation Pro, however, full control of all text effects is available from the Info



THIS IS THE BASIC TEXT STYLE USED IN OVATIONPRO

THIS IS THE BOLD EFFECT

THIS IS THE ITALIC EFFECT

THIS IS THE SUPERSCRIPT EFFECT

THIS IS THE SUBSCRIPT EFFECT

A SELECTION OF TEXT EFFECTS ALL AVAILABLE AT THE CLICK OF A MOUSE BUTTON

Figure 8. Ovation Pro's text effects.

Palette. Like the original Ovation, fonts are accessed in a Mac-like way. For example, one of my favourite font families is Palladio (from the Font Company's URW collection); in Impression (and all other RISC OS applications) the hierarchical menu shows Palladio with Bold, Regular and Medium sub-options, together with italic variants. With Ovation Pro, on the other hand, you get Palladio (which implies Palladio Medium) and Palladio Regular. The Bold weight is available through the Bold button, and the same applies to italic variants. Whilst this method will appeal to users of Mac software, I feel it is a shame that the excellent Acorn hierarchical font menu system is not adhered to; after all, Mac users have to pay extra for a program such as *Type Reunion* to have that in Mac OS!

PRODUCT INFO

Product	Impression Publisher and Publisher Plus
Supplier	Computer Concepts Ltd Gaddesden Place Hemel Hempstead Herts HP2 6EX Tel. 01442 351000 Fax 01442 351010
Email	info@cconcepts.co.uk
Price	Publisher: £129.00 ex. VAT Publisher Plus: £229.00 ex. VAT
Product	Ovation Pro
Supplier	Beebug Ltd 117 Hatfield Road St Albans Herts AL1 4JS Tel. 01727 840303 Fax 01727 860263
Email	sales@beebug.co.uk
Price	£165 ex. VAT Upgrades from £79 ex. VAT

Text styles are much easier to create than previously, and can be applied to a word, a paragraph or a selection. For the first time in an Acorn DTP package, you can create drop capitals with ease. The Style option is a vast improvement over the original version, but is still a little way behind Impression's implementation; however, the effects options match and exceed Impression's facilities. Nevertheless, you still need to use the inbuilt *Characters* option to implement smart quotes. Figure 8 demonstrates the text effects.

The first release of Ovation Pro supports the importation of Draw, ArtWorks and sprite files, and also provides OLE: simply double-click on an image with Ctrl held down, and it will be loaded into Draw, ArtWorks or Paint (or other bitmap program) as appropriate, for you to modify. Pressing F3 will save it back into Ovation Pro. As for printing, the first release has the same facilities as the original Ovation.

The following features are missing from the initial release of Ovation Pro, but they are promised later in the year as a free upgrade for users of the initial release: *Full colour separations, image processing facilities, paragraph rules, contents and index generation, a thesaurus, graphics loaders, a virtual memory system, and automatic bulleting and numbering*.

Overall, Ovation Pro out-performs all other packages in terms of page layout facilities, and is vastly improved over the original with regard to text handling. For complex layouts and text requirements, it will suit almost every user. However, for those who wish to produce four-colour separations and have extensive control over the finer aspects of professional colour printing, Impression Publisher Plus currently remains unrivalled.

DTP News

Virtually dynamic

Users of Impression Publisher and Publisher Plus now have the opportunity to use virtual memory if they have a Risc PC or A7000. In version 4.08, Computer Concepts has rewritten parts of the program to take advantage of dynamic areas (available only on machines with RISC OS 3.5 and later), so that instead of document data being effectively part of the program, it is stored separately. This allows for bigger documents than previously, as well as making document handling much faster in general. As a side-effect, Impression can now be given virtual memory capabilities because Clares' new product, *Virtualise*, provides such facilities for any program which uses dynamic areas (see the Virtualise review in RISC User 9:2 page 41). Virtual memory, for the uninitiated, is the use of the hard disc to extend the memory of the machine: if memory runs tight, parts of the contents of RAM (in this case, data within dynamic areas) are stored on the hard disc instead, effectively extending the total amount of RAM available.

Impression version 4.08 also provides automatic smart quotes and word-count facilities. The upgrade costs £15 direct from Computer Concepts, and Virtualise costs £24.95 from Clares Micro Supplies.

Virtualise and Font Directory 2

There is a clash between these two excellent applications. The answer is to upgrade Virtualise to version 1.02 or later; simply return your Virtualise disc to Clares for a free upgrade. In the meantime there is a fix, which you can use while you are waiting for your upgrade: press F12, type in:

```
RMReinit Virtualise
```

at the * prompt, press Return twice, and all will be well. You will need to do this each time you switch your computer on!

Something to Sing About

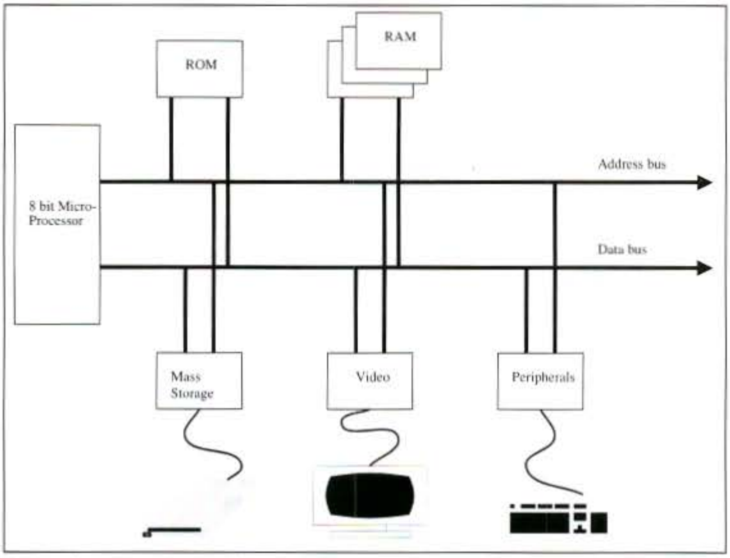
Alex Bienek, a hardware systems design engineer at Acorn Risc Technologies, explains all about CHRP

There has been much talk recently in the Acorn-related magazines and other computer industry press about something called CHRP (pronounced 'chirp'). CHRP stands for *Common Hardware Reference Platform*, and this article attempts to give a brief overview of CHRP and hopefully explain what all the fuss is about. But before we can understand the significance of CHRP it is necessary to understand a little of the history of these devices which have been known to us, at various times, as Micro-computers, Home-computers, Desktop computers and most recently Personal computers.

A brief history of small computers

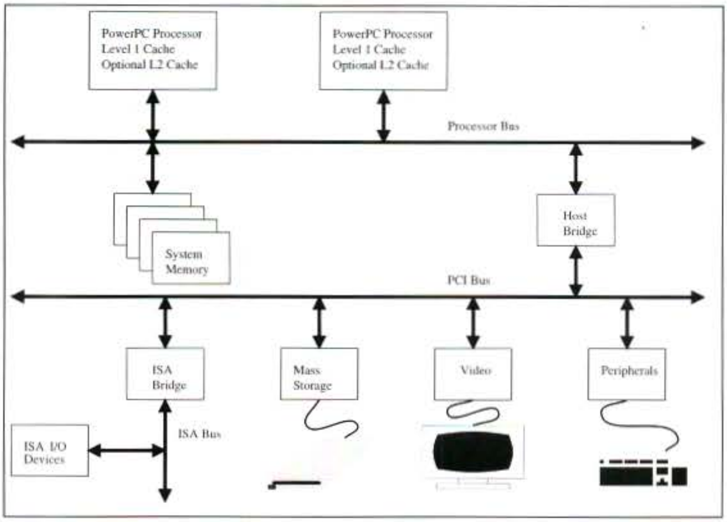
For computer hardware design engineers, the people who decide which chips to use and how to connect them together, the golden era for microcomputer design was the late '70s and early '80s. In those days, if you wanted to be part of the burgeoning computer industry you took your favourite microprocessor chip, connected up some RAM, wrote a small operating system, added all the peripheral chips that you could afford, put it in a plastic box and sold it. The list of 'Home computers' on the market was a long one: ZX81, Spectrum, Dragon, Nascom, Oric, Tiger, Apple II, BBC micro, Jupiter Ace and NEC, to name but a few. All of these systems shared a common architecture (that is, the way in which the circuits were connected together and operated) known as the *Von Neumann* architecture, named after one of the pioneers of modern digital computers, John Von Neumann. Figure 1 shows the basic arrangement of these systems, with a microprocessor, read-only memory (ROM), read/write memory (RAM), and I/O devices of various kinds.

Although very similar overall, these systems were also very different in important ways. Their microprocessors used different sets of instructions for executing the program tasks fed into them, and the features provided by the I/O devices (video interface, printer interface, floppy disk drives, serial ports etc.), although often common, were each implemented in their own proprietary manner. The consequence of all this was that software written for one system could not possibly work on any other system. The market for commercial software packages was fragmented amongst all of these different computer systems, and software writers were constantly having to guess which systems would become the most popular and hence the most commercially viable targets.



Early microcomputer architecture

As a result, users were unsure of which computer to buy, not knowing whether their particular choice would be served well by the software providers and how long it would be before the world moved on and support ceased. By the mid '80s it was clear that a standard was required. Like many standards in industry, its choice was based more on commercial expedience than technical excellence, and so the IBM PC architecture with its DOS operating system was born.



CHRP architecture

Beyond the PC

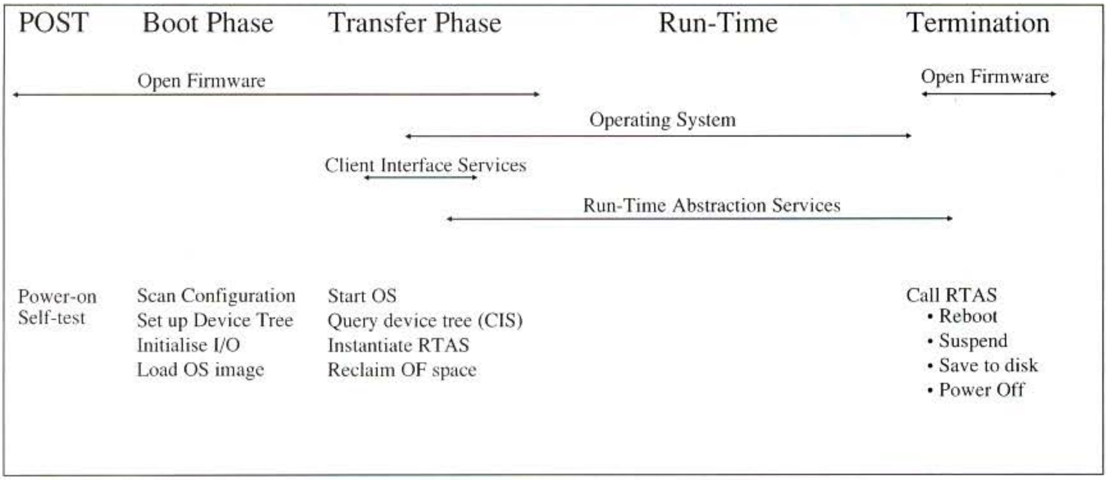
What the designers of the PC architecture did not anticipate was the unprecedented rate at which the integrated circuits (or chips) which make up personal computers would evolve. It took the aircraft industry, itself a fast-moving industry bolstered by the needs of war, forty years to make a ten-fold improvement in speed from 100mph to 1000mph. By comparison, microprocessors achieved a hundred-fold increase in speed in just ten years. To continue the analogy, with the same rate of progress the 100mph biplanes of the first world war would have been travelling in excess of 10,000mph by the time World War II broke out. The consequence of all this was that although a 'standard' existed, the very fact that it had to remain 'standard' and compatible with the past prevented it from properly exploiting the huge advances being achieved by the chip designers. Attempts by any one computer manufacturer to enhance the standard inevitably risked their product ceasing to be standard. Compromises had to be made, and things started to get messy. Some customers wanted to take full advantage of the latest that technology could provide, but remained nervous about spending money on equipment which could rapidly become obsolete simply because software providers and hardware expansion providers ceased to support it.

There have been several attempts to introduce new 'standards' (Apple Macintosh, Next machines, Risc PC) which have met with varying degrees of success largely due to customer nervousness.

The Common Hardware Reference Platform

From all of the above we can see that the ideal computer system is one that is able to take advantage of the dramatic improvements in performance attainable from new computer chips, whilst at the same time being able also to make use of the enormous amount of software and hardware add-ons already available. It needs to be sufficiently compatible with the most popular personal computers in use today that potential purchasers need not worry about its continued support by software and hardware vendors. Its compatibility will mean that it will be supported by default without those vendors necessarily having to do anything special to support it. Finally it must make upgrading via expansion cards a very much simpler process than it has been in the past for the users of IBM PC-compatible systems, avoiding any need for customers to have to set links on expansion cards and configure software. The CHRP concept was created not only to address all of these concerns but also as an attempt to dilute the dominance of Intel and Microsoft on the personal computer market, and encourage greater creativity and genuine competition. CHRP can allow a variety of system designs, as in the early '80s, but with the important difference that they are all software-compatible in terms of the applications written for the operating systems that run on them, and that all make use of common hardware expansion products.

The CHRP specification is the result of a cooperative venture by Apple, IBM and Motorola, and version 1.00 of the specification was released to the public in November last year. It is important to note that this system architecture is an open architecture; that is, nothing about it is secret or copyright, and anyone in the world is free to make use of it with no royalties due. All that is asked of those who implement it is that they conform fully with the specification. This is vital if it is to become a true 'standard' and customers are able to feel confident in purchasing the hardware from any manufacturer they choose and the applications software from any software vendor they choose. The three problems, then, which CHRP must deal with, are how to run software written for different systems (binary-level compatibility), how to make use of legacy upgrade cards, and how to cope with the advances that the future brings.



CHRP software control phases

How to run software written for different systems

CHRP systems use the PowerPC family of microprocessors from IBM and Motorola, which are currently used in Apple PowerMacs. These are very high-performance 32-bit RISC processors with all the latest features expected of a state-of-the-art processor, namely integrated data and instruction caches, floating point unit, memory management unit, single clock-cycle instruction execution, and power-saving modes. Simplicity necessitates that only one type of processor be fitted into the CHRP platform on the processor bus (the PowerPC type), but multiple processors of this type are allowed. Execution of software written for other types of microprocessor, such as the x86 or 68000 ranges, must be achieved by emulation; that is, each 'foreign' instruction must be identified and converted into an equivalent sequence of PowerPC instructions. Apart from some performance loss, this approach works fine with the exception of two factors: I/O access and 'endian-ness'.

The I/O access problem is one of how the user's chosen application software and, by implication, operating system, makes use of whatever peripheral devices are available on any given CHRP platform (such as storage devices, visual display unit, printers and communications). Fortunately, applications programs do not generally access peripheral hardware directly, but instead access it through device driver modules in the OS. Unfortunately, the responsibility to provide such drivers often lies with the OS vendor. If the chosen OS does not have a driver for a specific hardware implementation of a device, it cannot make use of it. With CHRP, it is the responsibility of the hardware vendor to provide what are called *Run-Time Abstraction Services*, or RTAS. The RTAS are part of the CHRP platform you buy, not the shrink-wrapped OS you buy to use on it. The software interfaces to the RTAS are well-defined, and provided that the OS vendor can ensure that their OS complies with the RTAS interface specification, they are assured that their OS will run on any CHRP-compliant platform, and that any application properly written for their OS will also run correctly.

'Endian-ness' refers to the order in which the bytes are stored in a multi-byte word. For historical reasons, amongst others, addresses used by microcomputer software always refer to byte-sized (8-bit) granules of memory, even though they may handle the memory in 32-bit or even 64-bit chunks. So, for example, if a 32-bit word contains the address of a table of data, the sequence of bytes which makes up that address will vary depending on the processor for which the software was written. For Motorola processors the most significant byte of the address will appear first in memory (this is known as *big-endian*), and for x86 processors the least significant byte of the address will appear first (this is known as *little-endian*). For example, the 32-bit value 00AB1C2D (in hexadecimal format) would be stored in memory as either:

big-endian:

Byte address	**Contents**
10	00
11	AB
12	1C
13	2D

or *little-endian*:

Byte address	**Contents**
10	2D
11	1C
12	AB
13	00

To cope with this problem, the PowerPC processor is able to efficiently re-order the bytes of addresses and other data stored in this manner.

How to make use of legacy upgrade cards

Two features of the CHRP specification are used to tackle this problem, *Open Firmware* and the *PCI* (Peripheral Component Interconnect) bus. The PCI bus is the latest in a series of expansion bus designs intended to solve the shortcomings of the ISA bus, namely performance and user-friendliness. In brief, the PCI bus is a 32-bit expansion bus running at 33MHz, giving a theoretical maximum data transfer rate of 132Mbytes per second. It incorporates sophisticated protocols to allow data transfer not only between the host system processor and the peripheral cards but also between peripheral cards. Critically, each PCI bus slot has a unique connection to arbitration hardware in the host system which ensures that address conflicts do not occur between expansion cards plugged into the system. In addition, the PCI system also allows bridges between the PCI bus and other expansion busses such as ISA, PCMCIA, and further PCI busses. Figure 2 shows how the PCI bus fits into a typical CHRP platform design.

The PCI bus is already in use in the majority of IBM PC-compatibles on sale today, and suitable expansion cards are plentiful. PCI expansion cards will typically contain firmware in ROM, either simply to identify the device to the OS so that a suitable driver module can be loaded, or perhaps providing a complete driver. If the PCI card vendor intends the card to be used in x86 platforms, then the ROM may contain x86 instruction codes, but there is a Working Group in the United States promoting the use of Open Firmware. Open Firmware is a technique by which a processor-independent device driver can be put into the PCI card ROM in place of, or in addition to, a processor-dependent driver. The Open Firmware driver is stored in a language called *FCode*, which is a byte-coded intermediate language for the *Forth* programming language. Forth is an ANSI standard stack-oriented programming language which can be easily and efficiently implemented on any computer system. At power-on, a CHRP-compliant platform will carry out a Power-On-Self-Test (POST) and then enter an Open Firmware boot phase which will identify and configure all system components (mass storage devices, expansion cards, etc.), generate a device tree indicating what resources are available to any OS to be run on the system, and finally locate and load the OS image to be used. The process of transferring control of the system to the OS will involve the OS making use of a *Client Interface Service* (CIS) to generate the Run-Time Abstraction Services (RTAS), mentioned above, that it needs. Figure 3 illustrates the boot process.

How to cope with the advances that the future brings

History has shown that the principal desires of users for enhancing their personal computers is that they should run faster, have more memory and have more I/O devices such as CD-ROMs, scanners, network connections, etc. CHRP addresses these needs by using a processor architecture that can be scaled up from 32 to 64 bits, taking the addressing range from 4 Gigabytes to 18 million Terabytes, an expansion bus that can also be scaled up to 64 bits and run at 66MHz, giving a maximum transfer rate of 528Mbytes per second, and the option for multiple processors, although at present all processors on the processor bus must be of the PowerPC family.

Acorn and CHRP

A personal computer which gives the user the choice of running Microsoft Windows NT, Apple Mac OS, IBM OS/2 Warp, IBM AIX, SunSoft Solaris in native (binary) mode and Windows 95 under emulation will be a very tempting beast. So where does this leave the RISC OS user? There are several ways in which RISC OS can be added to that list. It could be run under emulation; performance and compatibility would be issues here. The core elements of a Risc PC could be put onto a PCI expansion card, and this card would use a selection of the CHRP platform services such as mass storage, video output and general I/O ports. Main memory could be placed on the PCI card, or the CHRP memory could be used, or a combination of both. Perhaps the most intriguing option would be to place an ARM processor on the CHRP processor bus, via suitable interface hardware, alongside the PowerPC processor. At present this would violate the CHRP specification, but it is not unlikely that future iterations of the specification will allow for multiple processors of different types. This would certainly give rise to some exotic systems with explosive performance. CHRP may even evolve into a processor-independent architecture, allowing for CHRP platforms containing only an ARM processor, or even an array of ARM processors for truly multi-processor, multi-tasking operating systems such as TAOS.

Applecorn?

Mark Sealey looks at the implications for education of the new Joint Venture Company between Acorn and Apple

It goes without saying that the new joint venture between Apple and Acorn is of extreme interest and importance to the world of education. The new company will start trading officially on April 2nd, and is likely to have a major effect on education in this country. Here we assess why it has happened and what impact it will have on schools that have bought (or are contemplating buying) RISC OS machines. Finally, it's necessary to ask whether all of this is a good or a bad thing for the Acorn education community.

Why?

Acorn and Apple clearly both believe that the Joint Venture is likely to be beneficial; otherwise they wouldn't have been a party to it. True, both companies have been in difficulty of late; but then, who hasn't? However, Acorn has been immensely strengthened by its alliance with Oracle and the imminence of StrongARM. Apple, also, has made imaginative appointments at the top of its multi-national structure which are likely to have far-reaching effects; now word has it that morale in the company's California headquarters has not be so high for some long time. There ought to be little cause for concern, then, about the commercial viability of either company; in any case, an alliance with what to Apple will seem a relatively small UK concern is not alone going to assure its future.

Conversely, Acorn's alliance with Apple UK, which is estimated to have little more than 12% of the UK education market, would not by itself guarantee long-term survival. Yet there are indications that key Wintel suppliers in the UK were 'worried' by the announcement of the Joint Venture.

Heritage

So why, if not to save either of their skins, has this Joint Venture company been formed? Well, Acorn and Apple have such similar heritages in their approaches to education, and in their different ways, both are experts in technological and stylistic innovation. Their cultures are also remarkably similar in many ways. Importantly, too, they have complementary experiences. Let's assess how each of these will affect schools.

Both RISC OS and Mac OS have been designed, unlike DOS and Windows, with ease of use in mind. They are aimed at user-centred operation, and do not require an implicit understanding of the way computers work. Both RISC OS and Mac OS directly sponsor creativity: drag and drop and transparent file-typing mean that pupils need be less aware of the source, location on a hard disc and properties of material that they are using. They can concentrate instead on assembling it, easily and quickly, to achieve (and, importantly, to experiment with) a given result.

Brendan O'Sullivan, new MD of the Joint Venture, speaks enthusiastically about the future: "Here we have a great opportunity to marry the very best technologies to provide education with the very best solutions," he says. It seems to me that his intention, and that of the team being put together from both communities, is to cherry-pick from the best of both worlds.

This is likely to mean in practice that the new company will make the most of Acorn's expertise in selling into schools; this consists of listening to staff, and supporting independent software and peripheral developers to maximize the superb technology that RISC OS remains.

It will also mean that Acorn users may soon be able to benefit from some of the most sophisticated technology... QuickTime video, QuickTime VR imaging, superior publishing products, not to mention high-speed servers for telecommunications, speech recognition and (significantly) the flexibility of *OpenDoc*. This is a highly user-friendly system of software organisation that allows individual task-centric applications to interact with one another to complete a job in the most efficient way. It is in sharp contrast to the huge, sprawling monoliths, for example, of some of the 'office' suites from Acorn's and Apple's competitors.

PPCRP

If it comes at all, dual access to both Mac OS and RISC OS will not come, most analysts believe, from an emulation of the foreign operating system in software or hardware on the other manufacturer's machine, but from a machine marketed (and developed?) jointly by both Acorn and Apple as part of the Joint Venture. It has already been announced that this machine is likely to be of the new PowerPC Reference Platform (known otherwise as *CHRP*, or Common Hardware Reference Platform, developed in a consortium by Apple and IBM). This uses PowerPC RISC chips, is infinitely flexible, and enables software from a variety of sources to run seamlessly (see the article starting on page 19).

How well does this work? Apple users currently have a choice when they install new software on System 7 (the current iteration of the Mac OS) machines. It can either install as what is known as 68K or as PowerPC code. This refers to the CPU in the machine, which will either be of the Motorola 680x0 family or a PowerPC chip such as the 604. The important thing is that both installation and operation are utterly transparent to the user. In some ways, this can be compared (if the operating systems were not different) to buying software that would either run on the 6502 CPU of the BBC Model B computer and/or the first ARM chips!

Migration

Clearly, Apple attaches great importance to customers' ability to migrate from one working environment to another. So does Acorn, as witness the 6502 Emulators available when the Archimedes computers first appeared in 1987 (before any kind of windows environment was available for DOS users, of course) and the later, much more sophisticated emulator reviewed in these pages last month (RISC User 9:4, page 23). When did Wintel ever offer such upgradability?

By the same token, file formats are likely to be even more interchangeable on any PPCRP machine. This counts as much as any falsely lauded 'industry standard'. The industry standard is ASCII, HTML and GIF etc. and hierarchical disc directories, not Windows! Users of machines promoted by the new Acorn-Apple Joint Venture need have no worries about interoperability.

One could speculate further and imagine a time when a CHRP machine would run RISC OS in the same way that RISC OS can run DOS and Windows. This would mean that schools with Apple software and resources but envious of the wealth of educational material available for RISC OS are just as likely to be satisfied by what the Joint Venture has in store as are those who own Risc PCs but have looked longingly at products like *FileMaker Pro*, *ClarisWorks*, *Netscape* and *Macromedia Director*.

Their day, it seems, will come; and when it does, it will future-proof investment for schools in the same way that the Risc PC has and as the Netsurfer will, if it sells.

Conclusions

So, your school has a suite of Risc PCs. Should you be worried? No. In pointing out the rapid change in technology, and the extent to which what is bought now is likely to be in need of updating sooner than you think, Brendan O'Sullivan says: "It is our intention to support both RISC OS and Mac OS, and users of both can look forward to continuing support."

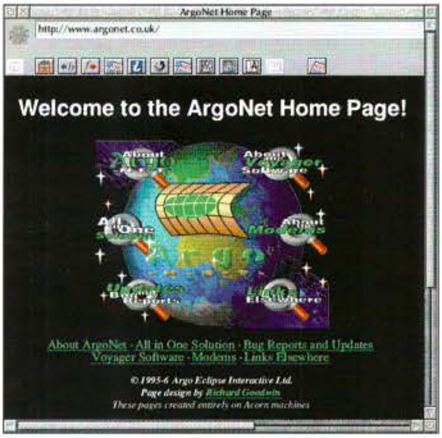
That this would be the case was, indeed, the opinion of all of the Acorn developers to whom I have spoken. They were unanimously positive. Bigger potential markets mean healthier software developers, which usually means livelier, more innovative, more finely-tuned software of real quality for our kids.

But for how long? It is my guess that it will be for as long as there is no easy migration path to a better, more sophisticated and technologically superior solution borne of the expertise of both companies. By then the scene will be changed yet again. Their track records are good. They each have the backing of major world forces (Olivetti and Apple Inc) and they can both claim with much justification that their success in providing education with what it wants is second to none.

This is not a time for concern, but for celebration!

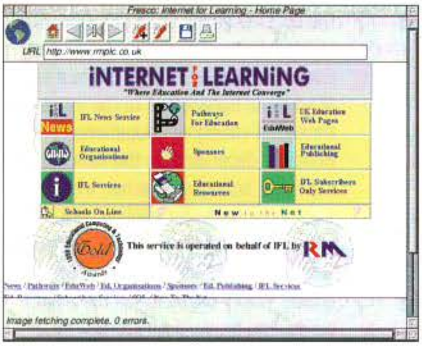
Welcome to the Connected Learning Community

Chris Drage looks at how schools can get connected to the Internet


ArgoNet Home Page
http://www.argonet.co.uk/
Welcome to the ArgoNet Home Page!
About Argo Net
About Voyager Software
All in One Solution
About Modems
Updates Bug Reports
Links Elsewhere
About ArgoNet · All in One Solution · Bug Reports and Updates
Voyager Software · Modems · Links Elsewhere
© 1995-6 Argo Eclipse Interactive Ltd.
Page design by Richard Goodwin
These pages created entirely on Acorn machines

The Argonet home page

The Internet is a huge collection of powerful host machines connected across the globe by high-speed links, to which vast numbers of individual machines connect by traditional phone lines. When you 'visit' an Internet site, you are really connecting to another computer at the other end of a telephone line. This anarchy of networks therefore offers a means of communication and a forum for the exchange of ideas, and can be likened to a huge library of information which is being constantly updated with 20,000 pages of new information every day. The educational ramifications of this are quite enormous. Just as the the introduction of computers to the classroom, and to the core of the modern curriculum, has opened up new ways of learning and expression, access to the Internet further extends this path. To get going, all you need is a modern modem, internet software and an Acorn 32-bit computer with RISC OS 3.1 or later, 4Mb of RAM, a hard disc with at least 8Mb free and a high-speed serial port. Ideally, the machine should be a Risc PC or an A7000. A modem like the US Robotics Sportster rated at 14,400 baud or, preferably, 28,800 baud is an ideal vehicle for getting you Internet access. I have used the 14,400 Sportster with children now for nearly a year with no problems whatsoever. Once you're up and running, all you have to do is remember to switch it on!


Fresco: Internet for Learning - Home Page
URL http://www.rmplc.co.uk
INTERNET FOR LEARNING
"Where Education And The Internet Converge"
IFL News Service
Pathways For Education
UK Education Web Pages
EduWeb
Educational Organisations
Sponsors
Educational Publishing
IFL Services
Educational Resources
IFL Subscribers Only Services
Schools On Line
New to the Net
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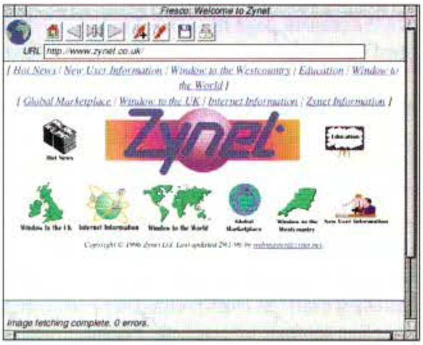
RM's Internet for Learning home page

The other vital element in the system is Internet software which will permit access to all the features of the net (see Alan Wrigley's roundup in RISC User 9:2). I personally favour the ANT Internet Suite (£99) for overall ease of use and performance. It is worth noting that if you decide to join BT's *Campus World* or *Zynet*, each of these providers offers the ANT suite and support. The most difficult aspect of using any Internet software is getting it set up correctly for your own situation. The ANT suite makes this a doddle, as long as you know your details: provider address, account number, password, etc. With these details to hand, setting up takes but a few minutes. This software provides all the elements required in order to use the Internet to its fullest. The mail system took a little while to get used to (I had to unlearn the PD software I had got used to), but within a short time I was sending emails all over the world. *Fresco*, the WWW browser, is a lovely little


Fresco: Welcome to Zynet
URL http://www.zynet.co.uk/
[Hot News | New User Information | Window to the Westcountry | Education | Window to the World]
[Global Marketplace | Window to the UK | Internet Information | Zynet Information]
Zynet
Hot News
Education
Window to the UK
Internet Information
Window to the World
Global Marketplace
Window to the Westcountry
New User Information
Image fetching complete. 0 errors.

The Zynet home page

program: load it, click on it and off you go. All you need to worry about is building up your hot-list of relevant sites. One small criticism: I wish Fresco would list all its hot-listed sites alphabetically. It gets a bit awkward when you have accumulated about 20 or so sites. Overall, the ANT suite performs extremely well and, to date, gets my full recommendation for schools. Buying the software when you subscribe can result in savings (e.g. a 10% discount with Zynet).

Internet education providers

RM's *Internet for Learning* (IFL) was the first Internet provider for education users, and currently supports more than 2000 dial-up accounts and over 30 networks. Single subscription accounts are £120 per annum, with an additional setup fee of £25. There are also network deals too. These buy you access to *Pathways*, an indexed guide to thousands of educational resources on the Internet and a filtered service to restrict access to known undesirable Internet resources. You also get access to a growing number of educationally focused resources hosted by *Internet for Learning*. What I find the most exciting feature of IFL, though, is *EduWeb*. IFL grants you 5Mb of free space on their World Wide Web server and an entry into the EduWeb directory. Many school communities are taking advantage of this and putting up complete prospectuses and school profiles, as well as children's own pages and WWW resource page links they have used successfully.

Many teachers, parents and school governors are concerned that children who have access to the Internet will find material which is generally considered to be unsuitable or inappropriate. It is advisable that young people are not left unsupervised when using any Internet service, including even the most protective ones like *Internet for Learning*. Indeed, RM claims that 50% of the 12,000 or so newsgroups on the Internet are not supported by them because the material they contain may be considered to be inappropriate to school-age children, offensive to many members of the public or dangerous in some way (e.g. advice on drugs, bomb-making, etc.).

Inevitably this makes the provider a censor of information, and this is not a comfortable position for many since it raises many issues, including the ethics of censorship. Although most providers favour tools which put the control back into the hands of parents and teachers, this is not technically feasible yet. Some, like RM, are looking at a variety of ways in which it can be achieved.

Both Zynet and Argo are new systems which are currently establishing themselves. Zynet currently has 64 POPs covering 80% of the UK, with an annual charge of £141 inclusive with a £23.50 initial connection fee. The Zynet Education Service has been specially tailored to the specific needs of all those involved in the Primary, Secondary and Further Education sectors. Zynet offers a range of levels of connection to the Internet through a variety of Educational Bundles, depending on the needs of the individual school or teacher, including: web home pages for each school, special interest newsgroups, controlled access, mailing lists, hot-links to quality WWW pages for all the main curriculum areas, data storage for schools to take part in national projects, introductory and advanced training, network connections, and web page authoring software. The only running costs will be the initial price of your connection plus the telephone link to Zynet, which for most users will be the cost of a local telephone call. Zynet offers technical support six days a week.

Argo is a very new provider, offering everything a school needs to connect to the Internet, from supplying a modem through to pre-configured *Voyager* Internet software, and the actual connection itself via the ArgoNet system. The pack is supplied pre-configured, and it is very easy to set up. All the technical bits are hidden and only accessed if you need to change your setup. Argo offers a help line via email or free-call support phone line. The software doesn't just allow you to filter web pages but all Internet resources, making it easier to fully restrict unauthorised access. All options are password-protected, and all activities automatically saved to a log file, making it easy to track what went on and when. A network version of the Voyager software is due soon, which will allow a network of Acorns to share one modem to access the Internet, providing support for multiple email addresses at the same site. The Argo subscription includes continuous upgrades to the software, and access to free support and resource locations for as long as you subscribe, with no additional charges. If a school is willing to let Argo present the Internet to its parents and governors and show them the benefits they would gain by going online, then they can receive their Internet access totally free! A free demo disc and information pack is available from Argo. Pricing is at £12.50 ex. VAT per month, with no sign-up charge and a free first month. Paying in advance annually saves £15, at £135 ex. VAT. When the network version appears, there is expected to be a one-off charge of £5 per extra machine on the network. Contact Argo for firm details.

Contact Addresses

ANT Limited, PO Box 300, Cambridge CB1 2EG **Tel:** 01223 567808

Argo, 1 The Shopwhyke Centre, Chichester, West Sussex PO20 6GD **Tel:** 01243 531194

Zynet Ltd, Minerva House, Baring Crescent, Exeter EX1 1TL **Tel:** 01392 410137

RM, New Mill House, 183 Milton Park, Abingdon, Oxon OX14 4SE **Tel:** 01235 826000

A Tale of Two Desktops

Richard Hallas compares the RISC OS desktop with its Mac OS rival

In the light of the joint venture between Acorn and Apple, Acorn has announced that it will be increasing the interoperability of RISC OS and Mac OS, as the latter is to be the default operating system in future CHRP machines. It seems appropriate, therefore, to take a look at the two desktops side by side.

Apple was the first company to introduce a Wimp environment on a computer which was widely available to the masses. Launched in 1985, the Mac was an amazing side-step from what people expected of a computer, and it is hardly surprising that the Mac has attracted a large number of advocates. Certainly the design philosophy behind the Mac has always been for it to be as user-friendly as possible.

The Mac desktop has evolved continuously over the years, but it still looks and behaves in the same way that it always did; so can it really be better than the younger RISC OS? The desktop is what makes a computer productive and enjoyable (or not) to use, and that's where RISC OS scores highly; so how do the two compare?

Finding files

The Mac equivalent of the RISC OS filer is called the *finder*. It has some nice features, such as filenames of up to 31 characters in length and the ability to place files and folders (directories) wherever you want them in the large-icon view. Also, dragging a file over a folder icon will copy it inside that directory without any need to open another window, and dragging a file onto an application icon in a finder window will start the application with that file loaded into it.

Have a look at figure 1. In the 'current' window (the one with coloured-in window tools) you can see a full-info view of a finder directory. For all folders in such a full-view window, clicking on the little right-pointing arrow to the folder's left will expand the window to show the contents of the sub-directory, so you can view multiple levels of sub-directory (or even a whole disc structure, if you wish) within a single window; very useful indeed. The next window down the stack is a large-icon view. Note the useful information presented below the title bar. The viewing style and position of icons is remembered locally for each finder window. The partially-obscured window at the top left of figure 1 shows another desirable feature of Mac OS: the ability to have a thumbnail-size preview of a graphic image file actually as part of its file icon.

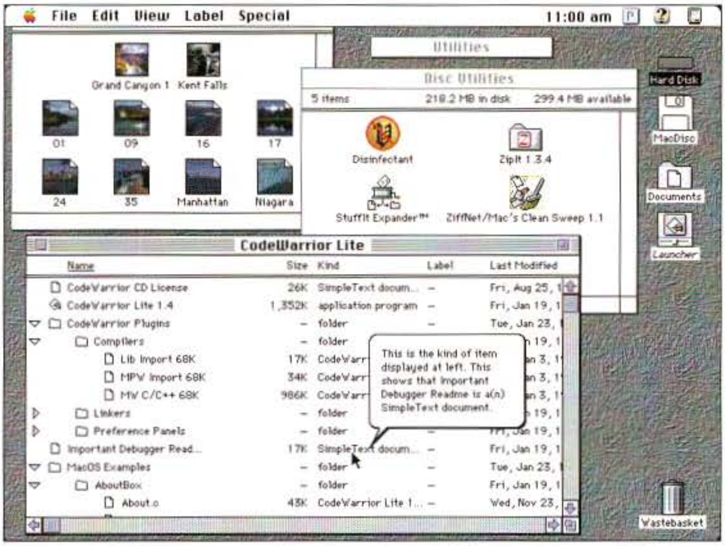
For its own part, though, the RISC OS filer has some nice features which are not in Mac OS, such as solid dragging of file icons rather than the Mac's outlines (this also extends to the rest of the desktop, of course), and the ability to move up the directory tree by clicking on a filer window's (or a document's) close tool with Adjust. Most important is the RISC OS ability to save and load files by dragging icons between filer and/or application windows with no distinction being made between discs and applications. Such things are simply not possible on the Mac, and even the saving of files to disc has to be done through awkward and inefficient dialogue boxes. Moving data between applications requires use of a somewhat clumsy clipboard system.

One of the most powerful but frequently overlooked advantages of the RISC OS filer is its ability to handle *image* filing systems. This means that a file whose contents represent a 'virtual disc' can be stored on another disc and can be accessed transparently as part of the directory structure of the parent disc. Thus, for example, we can access the files within archives, PC disc partitions and so on as if they were normal directories, even though they may have different filename conventions.

Desktop design

The Mac designers' idea was to relate what is seen on the screen to real-world objects; so the screen was called the desktop, and on it could be seen a wastebasket for throwing things away, representations of the attached storage devices and so on, and these could all be moved and placed wherever the user wanted them to be. Put a floppy disc in the disc drive, and a new disc icon appears on the desktop; drag it to the waste basket (a rather illogical requirement, actually), and the icon vanishes as the disc pops out of the drive. For simplicity, the mouse was given just one big 'activate' button.

The Mac desktop has a menu bar running across the top. At the extreme left is the Apple menu; this typically contains customisable short-cuts to lots of system utilities, other applications and so on. The remainder of the menu items at the left-hand side of the menu bar relate entirely to the application currently in use, and are equivalent to the top level of a RISC OS pop-up menu. The right-hand side of the menu bar has fewer options, but will typically give access to help facilities (balloon help and on-line manuals) and, more importantly, a 'switcher' menu which lets you choose the current task.



Name	Size	Kind	Label	Last Modified
CodeWarrior CD License	26K	SimpleText docum...	–	Fri, Aug 25, 1
CodeWarrior Lite 1.4	1,352K	application program	–	Fri, Jan 19, 1
CodeWarrior Plugins	–	folder	–	Tue, Jan 23,
Compilers	–	folder		n 19, 1
Lib Import 68K	17K	CodeWarr		n 3, 1
MPW Import 68K	34K	CodeWarr		n 3, 1
MW C/C++ 68K	986K	CodeWarr		n 3, 1
Linkers	–	folder		n 19, 1
Preference Panels	–	folder		Fri, Jan 19, 1
Important Debugger Read...	17K	SimpleText docum...	–	Fri, Jan 19, 1
MacOS Examples	–	folder	–	Tue, Jan 23,
AboutBox	–	folder	–	Fri, Jan 19, 1
About.o	43K	CodeWarrior Lite 1...	–	Wed, Nov 23,

This is the kind of item displayed at left. This shows that Important Debugger Readme is a(n) SimpleText document.

The basic Mac desktop, showing several finder windows and a help bubble

When it was first released, the Mac was single-tasking; although it allowed multiple windows to be open on the desktop, all the windows belonged to a single application. Later, Apple added a paging system which allowed you to have multiple programs 'open' at once. You could only use one at a time, but clicking on the right-most icon on the menu bar would switch between 'pages', allowing you to access them sequentially. This has evolved into a drop-down menu listing the applications. Although the Mac has got better at doing several things at once over the years, it was not designed to be multitasking from the outset, and it suffers now because of that. Mac users do not have the same kind of drag-and-drop luxury of RISC OS; in fact, for much of the time they are locked into working within a single window.

The 'current' window on a Mac is always at the front of the others, and equates to the 'input focus' window under RISC OS, though it's more restricting. Imagine you are working in a word processor, and you want to get at a file you can see in the finder. Click on that file, and the finder will become the current task: all of its windows will jump in front of the word processor document, with the window you clicked in becoming the foremost window.

In effect, the Mac has a two-tier stack of windows: although several applications can be running, only one can be in use at one time, and all its windows will be at the front of the others; and within the running application (or top set of windows), only one window can be current, and it will be at the front (though associated toolboxes may overlap it). There are opportunities for data to be dragged between windows and applications, but these are much more limited than under RISC OS, and you always have to contend with windows jumping to the front of the screen.

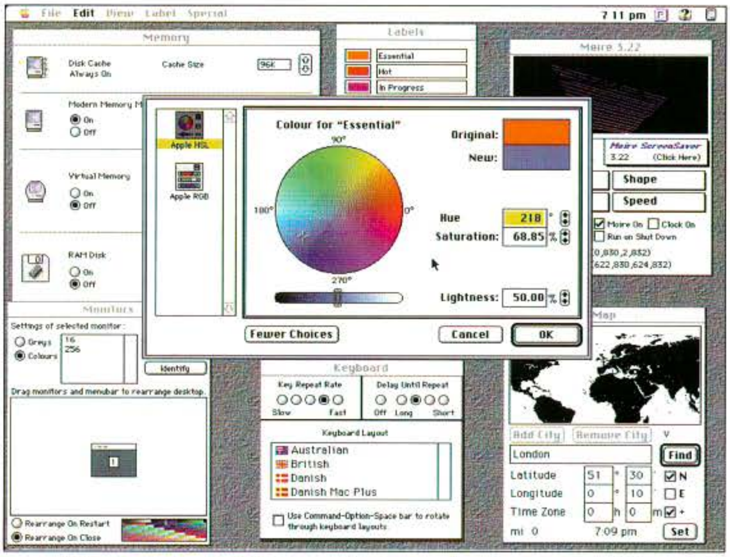
Acorn's approach

RISC OS has never implemented the desktop analogy to quite the same degree; it is more concerned with presenting a logical, coherent and productive working environment than relating to real-world items. It was designed to be multitasking from the start, and this is where it really scores. There are no artificial restrictions imposed about the stacking order of windows, and the Adjust mouse button lets you slide windows around without bringing them to the front (in addition to all its other subtle but indispensable functions). Therefore, the RISC OS desktop has a much more usable 'depth' than Mac OS.

More importantly, there is no such thing as a 'current' window or application; all applications are always available, and all their windows are current. In fact, the input focus window only exists because it would not be sensible to be able to type into more than one window at once. Data interchange protocols were present from the outset, so it is easy to drag files between different windows and applications. As for menus, where Mac users have to switch to the application they want and then move the pointer to the top of the screen to access the required menu, RISC OS users just point at the window or object of interest and click the Menu button to get a context-sensitive menu instantly.

Tools and gadgets

The components comprising windows on RISC OS and Mac OS desktops are broadly similar. Mac windows may usefully be 'collapsed' to save screen space by double-clicking on a title bar (the 'Utilities' box in figure 1 is actually a collapsed window), and they are in some ways more flexible than Acorn ones. However, RISC OS windows are generally easier to handle: apart from the ease with which they can be shuffled around (no Mac windows have 'Back' icons, for instance), they feel much more solid in use. Scroll bars are proportional (whereas the has Mac little square tabs), and dragging them locks the pointer into a line so that you can only travel the appropriate distance. The Mac has no concept of the *pointer rectangle* (the ability to confine the pointer to an arbitrary area), and it's very easy for the pointer to slip off while you're dragging the scroll bar on a Mac, resulting in the window resetting to its previous position. There's also no real interactivity; just as dragging a Mac window moves a dashed outline rather than the whole window, when dragging a scroll tab, the window contents do not update until you release the drag. Finally, you can scroll RISC OS windows in two directions simultaneously.



Disk Cache Always On — Cache Size 96K

Modern Memory Manager: ● On ○ Off

Virtual Memory: ○ On ● Off

RAM Disk: ○ On ● Off

Labels: Essential, Hot, In Progress

Colour for "Essential"

Original: / New:

Hue 218°

Saturation: 68.85%

Lightness: 50.00%

☑ Moire On ☐ Clock On

☐ Run on Shut Down

(0,830,2,832)

(622,830,624,832)

Settings of selected monitor: ○ Greys ● Colours — 16, 256

Drag monitors and menubar to rearrange desktop.

○ Rearrange On Restart

● Rearrange On Close

Key Repeat Rate: ○ ○ ○ ● ○ (Slow — Fast)

Delay Until Repeat: ○ ○ ● ○ ○ (Off, Long — Short)

Keyboard Layout: Australian, British, Danish, Danish Mac Plus

☐ Use Command-Option-Space bar to rotate through keyboard layouts

London

Latitude 51° 30' ☑ N

Longitude 0° 10' ☐ E

Time Zone 0 h 0 m ☑ +

mi 0 7:09 pm

Control panels let you set various aspects of the system's operation: here we see options for memory management, keyboard layout and screen settings, along with a world map and the Mac colour picker

Bells and whistles

Further notable features of RISC OS which score heavily over Mac OS are the lightning-fast anti-aliasing font manager, the easy desktop screen mode switching and the memory management facilities of the Task Manager. On a Mac, an application may crash because of memory shortage, and it is possible to increase its allocation using the application file's info box in the finder; but that's about as far as memory management goes. There is, however, a handy virtual memory facility which can be turned on or off as you see fit. There are also some very sophisticated typographical features provided by the Mac's latest font system, but few applications currently support them, and anti-aliasing is still absent.

Where the Mac really scores over RISC OS, though, is in the breadth of common resources, support utilities and integration it provides. *QuickTime* video support, for instance, is better quality than Acorn *Replay* and supports input as well as playback. Also very attractive is the ability to spread the Mac desktop over several monitors if you have more than one attached. There are many centralised operating system resources such as the colour picker (seen in figure 2), and colour calibration, essential for professional publishing work, is built in. On a more superficial note, there are several neat little add-ons such as handy *PostIT*-style 'stickies' for pinning notes to your screen.

Conclusions

Mac OS is actually very nice. It has, by default, many more attractive 'freebies' to hand than RISC OS, and the standard of presentation is generally much better. Indeed Mac OS is very good for beginners; it's only when you get down to really using it for productive work that you begin to understand why RISC OS is fundamentally better in terms of design. This is why I have always maintained that it would be far easier to add the Mac OS bells and whistles to RISC OS than it would be to apply the flexibility of RISC OS-style multitasking to the Mac. I have always felt that Acorn spent far too little time on the presentational aspects of RISC OS, and it is in such areas that Mac OS really scores. Let us hope that Acorn finally takes advantage of its operating system assets to provide something really spectacular for the next-generation CHRP machines before it's too late.

Apple Matters: Bridging the Gap

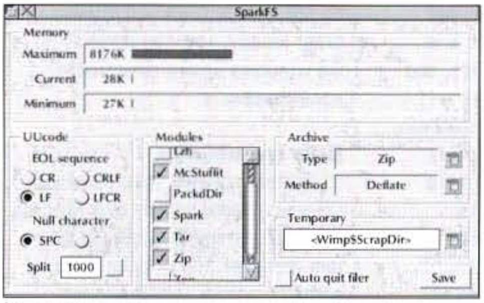
Acorn has promised enhanced interoperability of RISC OS and Mac OS machines, but that's still some way off; Richard Hallas looks at what's available right now

The Mac is, in some ways, a strange beast. The Mac OS desktop, and indeed the physical design of the Macintosh family itself, has always presented a very stylish image, but it is very much an operator's machine; the desktop is there to shield the user from the inner workings of the computer as much as possible, and getting below the surface is fairly daunting for the novice. Both physically and in terms of software, then, it represents a very 'closed' box.

This is reflected in a file structure which may justifiably be called 'weird'. Whereas most computers (including Acorns and PCs) save files as single discrete items, the Mac has a very unusual dual-file structure whereby many (but not all) files are actually comprised of *Resource* and *Data* components (known in Mac parlance as *forks*). Quite how the contents of the file are distributed between forks depends entirely on what those contents are and what application created the file; it's all too complicated to go into here. Suffice it to say that transporting files from a Mac to another platform presents significant problems.

Exchanging discs

Mac floppy disc drives are also unusual in that they are variable-speed devices. The standard Mac 800K double-density disc format makes use of the variable speed of the drives, and is thus physically impossible to read on Acorn machines. However, 1.44Mb high density format is a different matter; it's single-speed, just like the equivalent PC disc format.



Maximum 8176K
Current 28K
Minimum 27K
● LF
● SPC
Split 1000
☑ McStuffit
☑ Spark
☑ Tar
☑ Zip
Type Zip
Method Deflate
<Wimp$ScrapDir>

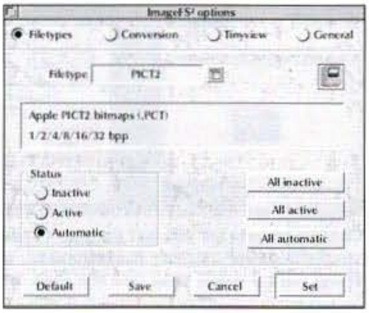
SparkFS provides numerous archive formats

If you try to format a double-density disc on a modern Mac, the only native format it will offer you is the 800K variable-speed one. However, Macs are also able to read a special native 720K single-speed disc format (although they cannot format discs to this standard themselves without a special system software extension), and this provides another opening for Acorn compatibility.

Since the arrival of Mac OS System 7, Macs have been able to read, write and format PC discs. Acorn machines have been able to do this for much longer, of course (since RISC OS 3 was introduced), so that's one easy way of transferring files between the two systems. However, transferring files on DOS floppies does have its restrictions, not least the need to truncate filenames to the DOS limitation of eight characters plus a three-character extension. On the Mac, which supports filenames of up to 31 characters, this can be a real nuisance.

If you intend to swap many discs between Acorn and Mac, therefore, a copy of *MacFS Lite* from Computer Concepts or *AppleFS* from Oregan Developments is a worthwhile purchase for your Acorn machine. Both programs allow you to use Mac-format discs, with their long filenames, though MacFS has the advantage of being a true filing system which integrates fully with the rest of the RISC OS desktop, to the extent that it even presents Mac 720K and 1.44Mb formats on the floppy drive icon's *Format>Other formats* menu. Both MacFS and AppleFS also let you access Mac CD-ROMs, but for full functionality, a new version of CDFS is needed from Acorn (one is due for imminent release).

If you're interested in transferring large files, the full (non-*Lite*) version of MacFS is a great advantage, as it allows you to access Mac hard discs and, in particular, SyQuest cartridges. SyQuest support is planned for AppleFS, and RISC User will be examining both MacFS and AppleFS in greater detail in a future issue.

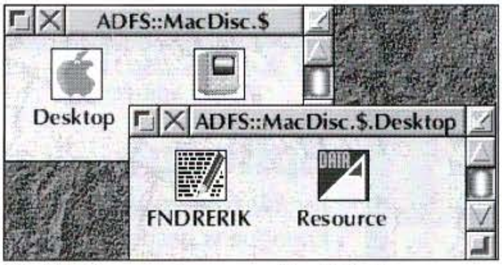


● Filetypes
Filetype PICT2
Apple PICT2 bitmaps (,PCT)
1/2/4/8/16/32 bpp
● Automatic

ImageFS offers great flexibility in handling foreign graphics files

Exchanging files

Once you've got your Mac files to your Acorn, what then? As is equally true with PC file exchange, many files will be of limited use because there is no obvious Acorn equivalent. However, there are extra difficulties with the Mac's rather peculiar fork files. Here, a copy of MacFS is a real advantage because it lets you open up *MacForks* files as though they were



MacFS allows you to open up MacForks files as though they were directories

directories and get at the contents of the forks. Not all Mac files are saved in the forks format, though; many graphics files (e.g. TIFF and PICT files), for instance, are saved in the normal single-file form which is immediately usable on Acorns and PCs.

So, when you've obtained your Mac files on your Acorn, there are various RISC OS programs which will be invaluable in using them. The following are the most obvious ones:

SparkFS: this is a characteristically excellent utility from David Pilling which allows you to handle a huge range of archive formats. This includes all the ones which are common on the Mac, such as MacStuffIt and Zip (the latter of which is also extremely common on the PC). SparkFS is also capable of decoding BinHex 4.0 files, which Mac users frequently use to send program data around the Internet (just as most Acorn users use uuencoding).

ImageFS: this truly outstanding utility from Alternative Publishing lets you treat many foreign graphic files as though they were native Acorn sprites, and double-clicking or dragging them will cause them to be used by any program which is capable of handling sprite files. Version 1 of ImageFS provides a one-way translation to Acorn sprite format, whilst version 2 lets you save files to foreign formats too. The file-types which ImageFS handles include Apple Mac PICT2 files, MacPaint files, and TIFF files, which are also commonly used on the Macintosh.

MovieFS: if you're interested in full-motion video, then Warm Silence Software's MovieFS is invaluable. It integrates seamlessly with Acorn's *Replay* to provide instant translation (which is completely transparent to the user) of foreign-format movie files, including Apple's *QuickTime*. An additional program which can either operate alone or plug into the existing MovieFS setup is Warm Silence's *QTVR Viewer*, reviewed last month, which allows Apple QuickTime Virtual Reality files to be played by Replay.

RTF loader: the translation of text files from one platform to another is by no means a painless procedure, and it is unfortunate that comprehensive and flexible document file formats are not standard between platforms in the same way as graphics files (even given that there are large numbers of graphic file formats). The nearest thing there is to a standard text interchange format is *Rich Text Format* (RTF), although it leaves a fair bit to be desired in terms of flexibility. Computer Concepts produces a text loaders pack for use with Impression, comprising a *WordPerfect 5.1* loader and a RTF loader. The latter allows you to both load and save text in Rich Text Format, and should be most useful for interchanging text with Mac word processors.

Although not in the same class as a general utility, Clares' *Compo* is worthy of mention because it is currently the only RISC OS program which is able to load and save Photoshop files.

Conclusion

To be fair, there is a reasonable likelihood that you may encounter a certain amount of trouble, even with all the utilities mentioned above. The trouble is the number of file formats around; you might find a StuffIt archive which cannot be fully handled by SparkFS, for instance, or an obscure graphic image sub-format which ImageFS cannot understand. In most cases, though, it's possible to get around such problems by using other programs or converting a file from one format to another, on one platform or the other.

Overall, the degree of flexibility of foreign file-handling available to RISC OS is surprisingly good, and such seamlessly integrated and flexible utilities as SparkFS and ImageFS couldn't easily exist on other platforms anyway; certainly there's nothing to compare with them at the current time. Both are inexpensive and should be bought by every serious user of Acorn machines, but for those on a tight budget, free software such as Acorn's *ChangeFSI* and David Pilling's *SparkPlug* can still provide lots of flexibility for file conversion; and DOS discs are certainly bearable for transferring smaller files.

Product	SparkFS
Supplier	David Pilling PO Box 22 Thornton Cleveleys Blackpool FY5 1LR
Email:	david@pilling.demon.co.uk
Price	£25 all inclusive
Product	ImageFS version 2
Supplier	Alternative Publishing Ltd Pentagon House Washington Street Glasgow G3 8AZ Tel. 0141 248 2322 Fax 0141 248 3638
Email:	sales@altpvb.demon.co.uk
Price	£39.95 ex. VAT
Product	MovieFS and QuickTime VR Viewer
Supplier	Warm Silence Software St Catherine's College Oxford OX1 3UJ Tel. 0585 487642
Email:	Robin.Watts@comlab.ox.ac.uk
Prices	MovieFS: £26.42 all inclusive QuickTime VR Viewer: £20 all inclusive (introductory offer only)
Product	MacFS, MacFS Light, Text Loader Pack
Supplier	Computer Concepts Ltd Gaddesden Place Hemel Hempstead Herts HP2 6EX Tel. 01442 63933 Fax 01442 231632
Email	sales@cconcepts.co.uk
Price	MacFS: £116.32 inc. VAT MacFS Light: £57.57 inc. VAT Text Loader Pack: £34.07 inc. VAT
Product	AppleFS
Supplier	Oregan Software Developments 36 Grosvenor Avenue Streetly Sutton Coldfield B74 3PE Tel. 0121 353 6044 Fax 0121 353 6472
Email:	sales@oregan.demon.co.uk
Price	£59.95 all inclusive
Product	Compo
Supplier	Clares Micro Supplies 98 Middlewich Road Rudheath Northwich CW9 7DA Tel. 01606 48511 Fax 01606 48512
Email:	sales@clares.demon.co.uk
Price	£169.95 inc. VAT

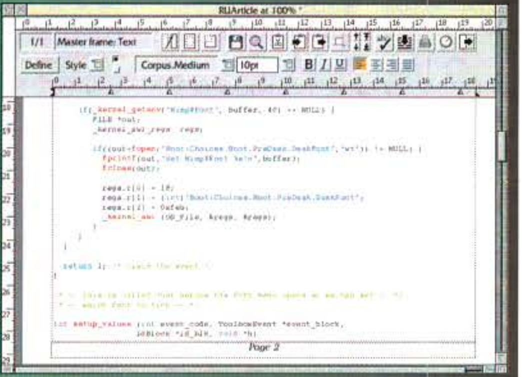
RISC *user*

Packed with useful applications, the disc costs just £4.75 inc.VAT.
Please add £1 p&p.

C-Light

by Tony Howat

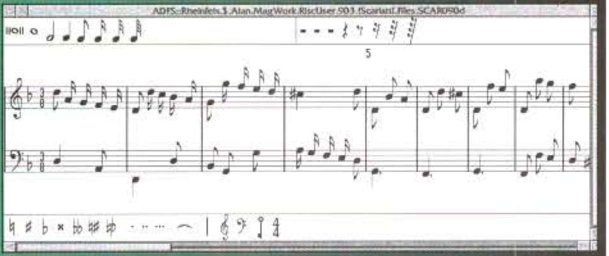
If you write C programs and also use Impression, then you will find *C-Light* a real boon. Not only does it convert C source code into a format which can be loaded into Impression, but it also highlights the code to make it easier to distinguish between comments and the main code, for example. The program makes use of styles, which can be altered to suit your own tastes.



Maestro files

by V. Oliver

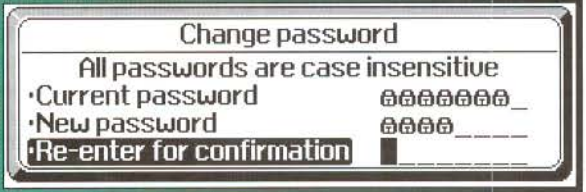
If you enjoyed the music by Scarlatti supplied on the RISC User 9:3 disc, then we have some more for you. These are Maestro files transcribed from Scarlatti's harpsichord sonatas. The Maestro file player *AutoPlay* is also included on the disc.


ADFS::Rheinfels.$.Alan.MagWork.RiscUser.903.!Scarlatti.Files.SCAR090d
5

Password

by Matt Browne

Password is an application for the Pocket Book II which restores the useful password protection facility that is present in the Psion 3a but was removed by Acorn from the Pocket Book II. By requiring the user to enter a password whenever the machine is switched on, it effectively prevents unauthorised access to your personal data. However, it does not affect the sounding of any alarms which you may have set.



Change password
All passwords are case insensitive
·Current password @@@@@@@_
·New password @@@@____
·Re-enter for confirmation ________

Epilogue

by Matt Browne

Epilogue is an open file manager with many excellent features. It will list all open files, give you a wide range of information about them, and allow you to specify files to be closed, either singly or as a group selection. It will also ensure that all data is written to a file before being closed, which makes it ideal for DOS discs where discs must be dismounted before removal, as otherwise data still in the buffer is lost.

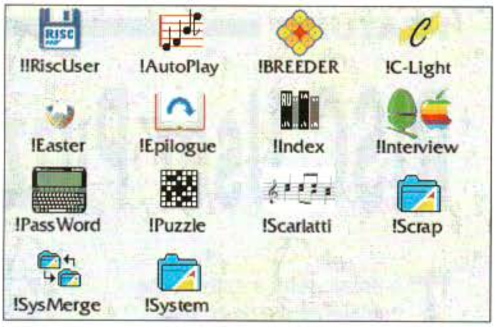
Brendan O'Sullivan Interview text

by Alan Bonsor

Due to space constraints in the magazine, we were only able to print highlights from our interview with Brendan O'Sullivan, MD of the Acorn/Apple joint venture company, in the article on page 38. The complete, unabridged text is provided on the magazine disc.

MAGAZINE DISC

April 1996



ColourShift

by Alan Wrigley

Back in RISC User 8:4 we published a utility called Modus that allows you to change the Risc PC's screen mode easily from the keyboard. This is very useful if you want to use a wide range of different modes, but what most users usually need is simply a way to change the number of colours on screen while keeping the resolution. *ColourShift* does this by allowing you to increase or decrease the number of colours using the + and - keys on the numeric keypad in conjunction with Alt.

Easter

by Douglas Boote

This is a very topical program that enables you to calculate the date on which Easter Sunday fell, or is due to fall, for any given year from 1900 onwards.

ArcScan Data

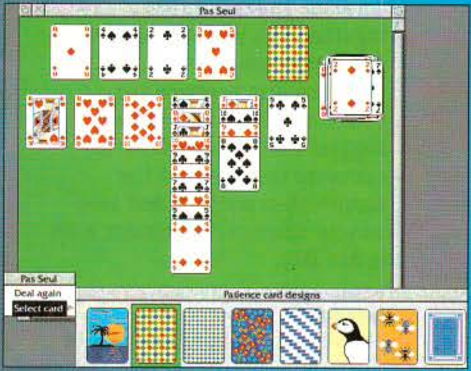
The *ArcScan* index for this month's RISC User.

!Index

Pas Seul

by Alan Stout

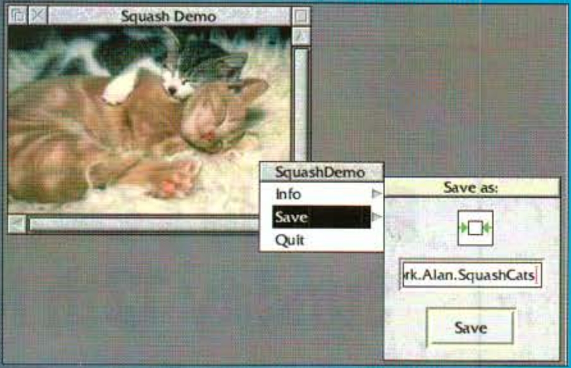
Pas Seul is another superb patience game from the author of Patience Plus (RISC User 9:3). It features the same high quality graphics, and will keep you absorbed for hours.



Squash Demo

by Alan Wrigley

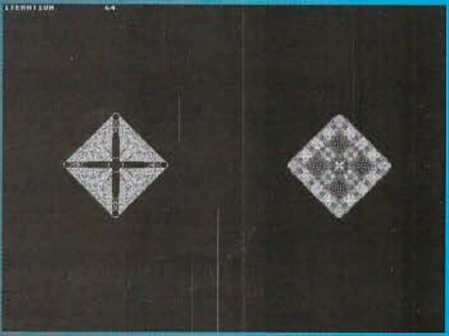
SquashDemo, which was published on last month's disc as a demonstration of the use of the Squash module, also uses the sprite display techniques described in this month's *Wimp Topics* article on page 41, and so the application is provided here to illustrate that article. It allows you to load sprites in either squashed or unsquashed format, and display them in a window. You can also save out sprites as Squash files.



Breeder

by Jean van Mourik

Breeder is an example of a cellular automation that produces spectacular kaleidoscopic patterns. Two patterns are displayed side by side, and each iteration of each pattern is based on the previous generation of the other pattern. This can lead to some fascinating displays.



RISC User Puzzle

Win a magazine and disc subscription with our regular puzzle feature.

Puzzle designed by Roger King

To enter, send a copy of the completed puzzle to the Beebug offices in an envelope marked 'Puzzle', together with your name, address and membership number. The magazine disc contains the puzzle as a Draw file, and we suggest that you use Draw to complete the puzzle on the screen, then print out and send us your solution. The closing date is 6th May.

Hexagons

Hidden in the grid are several software applications produced by Beebug. Can you find all of them?

K	T	E	N	J	W	G	M	C	R	T	X
C	O	L	O	Z	K	N	P	T	A	I	H
A	I	I	I	N	A	Y	U	S	B	D	E
B	D	F	T	S	A	I	N	C	U	E	A
Y	U	R	A	T	L	C	G	T	N	K	R
A	T	E	V	M	P	E	S	Y	E	S	S
L	S	T	O	J	U	I	U	C	M	E	A
P	E	S	C	V	J	K	O	T	R	D	Y
S	P	A	L	S	X	A	L	R	H	A	F
Z	Y	M	L	L	E	W	T	R	A	H	C
P	T	S	U	R	U	A	S	E	H	T	X
C	Y	S	A	E	E	M	C	N	C	C	E

Apple Computer

Acorn

BEEBUG's Early Summer Open Day

Sunday 12th May 1996 10am-4pm

With all the changes being made at Acorn we have arranged for an Acorn representative to give two 15 minute presentations and be available to answer your questions.

In addition we will have a range of exhibitors including Acorn, showing the latest in hardware and software, with special offers on the day. You will be able to get hands-on experience on the latest Acorn and PC computers.

At our last Open Day our PC support feature proved most popular, and the team will again be on hand.

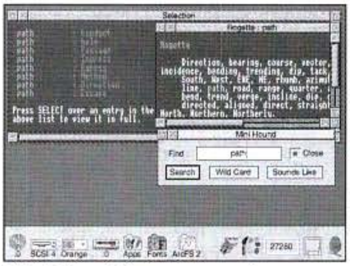
Why not treat yourself to a day out - there'll be so much to see and do.

BEEBUG 117 Hatfield Road, St Albans, Herts AL1 4JS
Tel: 01727 840303 Fax 01727 860263

Select & Collect

Simon Burrows gives advice on expanding your PD and Shareware collection

When I first started writing this occasional column back in RISC User 5:7, the world of Public Domain software was very different from now. PD software could only be obtained through personal contacts, discs from the network of PD Libraries, or expensive calls to Acorn bulletin board systems. These days, hundreds of megabytes of software can be obtained on CD-ROM discs costing under £20, and thousands of Acorn users have local-call access to the Internet with its huge libraries of Acorn PD applications.



Press SELECT over an entry in the above list to view it in full.

Rogette

Direction, bearing, course, vector,
incidence, bending, trending, dip, tack,
South, West, ENE, NE, rhumb, azimu
line, path, road, range, quarter,
bend, trend, verge, incline, dip,
directed, aligned, direct, straigh
North, Northern, Northerly.

Find: path

Word Hound thesaurus and dictionary

At a time when the Acorn market continues to undergo major changes, it is good to see quality new PD software continuing to appear. Please support PD libraries and software authors, especially those producing Shareware, so that they can continue to produce excellent software. Incidentally, a little known alternative to the Shareware system is called *Postware*; instead of asking for money to be sent, the software author simply asks to be sent a picture postcard from somewhere in the world. This costs far less than shareware registration but still helps motivate the author to keep on developing Acorn software.

Longfiles

PD authors have long had a tradition of filling in the gaps and deficiencies in RISC OS, and one of these is the ten-character limit on the length of filenames. *Longfiles*, by Jason Tribbeck, is a widely-used utility module which allows longer names (up to 55 characters) to be used for files, transparently in all but a few situations. You can choose which filing systems it should work with. I have never been convinced about the need for longer filenames, but you may find this utility useful, and it works well.

Word Hound

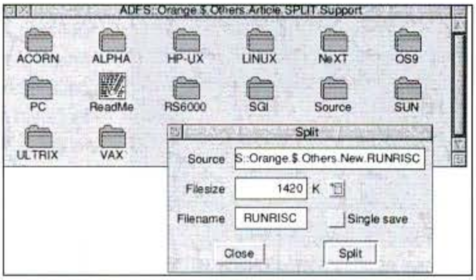
This application has been around for a year or two but may have been missed by some people. Written by Ian Palmer, who has produced several other excellent programs, *Word Hound* is a combined dictionary and thesaurus package offering definitions and alternative words for those which you type in. Word Hound can communicate with other applications, for example taking a word from your DTP package and offering an alternative word for replacement. Word Hound is actually the big brother of another package called *Mini Hound*, which is available as shareware and is limited to being a thesaurus. However, both packages are available for the bargain registration fee of £5.00.

Invoicer

Although the Archimedes was never accepted as a standard for big companies, many owners of small businesses have made good use of Acorn machines over the years to maintain their records and produce the necessary paperwork. *Invoicer*, by Anthony Goffart, is a handy utility for producing simple invoices to be sent to customers. It is nothing sophisticated, but is easier to use than a straight word processing package and produces professional-looking invoices.

Split

Have you ever needed to copy a large file from your hard disc onto a floppy, only to find that it is too big to fit, even if compressed? *Split*, by Adam Hamilton, is a neat application for splitting a large file across more than one floppy disc. Simply drag a large file onto the icon and Split will save it onto multiple discs. Restoring a split file is just as easy, with Split prompting the user to insert the necessary floppy discs.



Source: S::Orange.$.Others.New.RUNRISC

Filesize: 1420 K

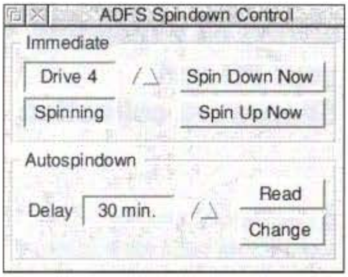
Filename: RUNRISC

☐ Single save

Split spreads large files over multiple floppy discs

SpinCtrl

Versions of RISC OS from 3.1 onwards include the facility to spin down most types of IDE hard drives connected to your computer while it is still switched on. This facility was intended for the A4 laptop computer, in which power consumption must be kept as low as possible, but it can be useful on desktop machines as well. Most experts advise that stopping the hard disc from spinning does not save any wear and tear, but it can be very useful to reduce the noise made by the computer, for example if you wish to leave it running overnight in a bedroom. Andrew Sellors' *SpinCtrl* makes it easy to configure a spin-down delay (similar to screen-blanking) or else stop the hard disc spinning immediately.

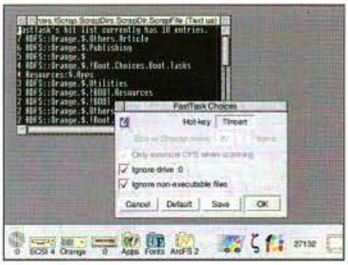


Drive 4
Spinning
Delay 30 min.

SpinCtrl lets you set spin-down times for your hard disc

Fast Task

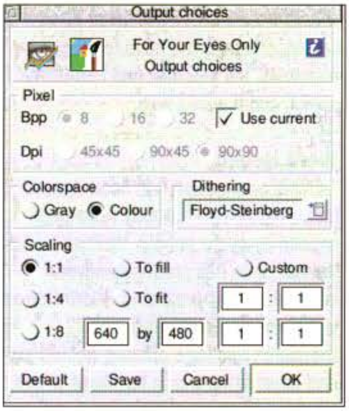
Fast Task, by Sam Kington, is designed for those of you who like using the command line interpreter (CLI) to start programs and tasks running. Unlike the command line, Fast Task does not usually require the full pathname of the program or task to be entered, as it keeps a list of the most regularly used directories, usually finding applications within seconds. This can be handy if you dislike delving around deep within directory structures on your hard disc or, particularly, a network.



Access applications quickly with Fast Task

For Your Eyes Only (FYEO) 2

FYEO version 2 is a popular image viewing program which handles JPEG, Targa, GIF and PPM format files. It is particularly well-known for the speed with which it renders JPEG format files on the screen. Written by Frank Lyonnet from France, FYEO does not offer any fancy features, just a good, reliable picture display. Shareware registration costs £5.00, and the registered version can handle 16- and 32-bit images.

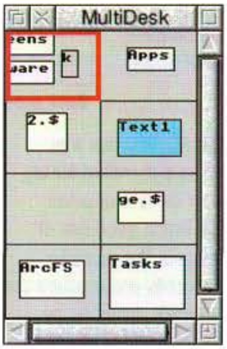


Pixel
Bpp ● 8 ○ 16 ○ 32 ☑ Use current
Dpi ○ 45x45 ○ 90x45 ● 90x90
Colorspace ○ Gray ● Colour
Dithering Floyd-Steinberg
Scaling
● 1:1 ○ To fill ○ Custom
○ 1:4 ○ To fit 1 : 1
○ 1:8 640 by 480 1 : 1

For Your Eyes Only version 2

MultiDesk

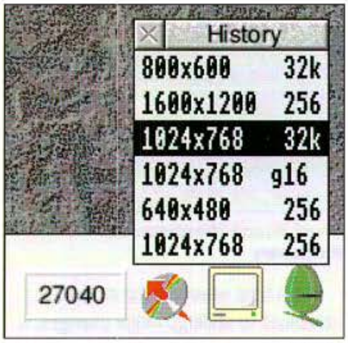
Virtual desktop programs are very common in the Public Domain, but *MultiDesk* by Julian Smith is one of the best I have seen. When loaded, it opens a small window showing the position of desktop windows in a large virtual desktop, several times larger than the actual desktop. Windows can be dragged off the visible screen without having to close them, and windows larger than the visible desktop can be opened without any problems. This can be especially useful when using DTP software; I often find a need to have more windows open than can be fitted on the screen.



MultiDesk lets you use a virtual desktop

ModeHist

Dick Alstein's *ModeHist* is a cute little utility for RISC OS 3 users which provides a mode history. This means that it shows the twelve most recently used screen modes in a window, and you can switch to any one of these modes with a single mouse click. This window is opened by clicking with the Adjust mouse button on the icon of the Palette utility or the Display Manager. It looks like an integral part of RISC OS and is very useful indeed. Also, clicking with Shift-Adjust automatically switches to the previously used screen mode.



800x600 32k
1600x1200 256
1024x768 32k
1024x768 g16
640x480 256
1024x768 256

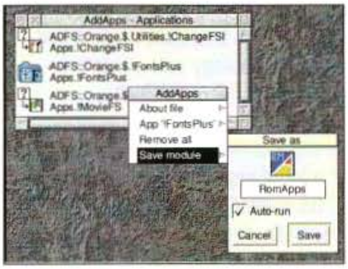
Easy recall of modes with ModeHist

VIDC Enhancer

The VIDC Enhancer used to be a very popular hardware upgrade for Archimedes machines predating the A5000, as it allowed improved screen modes to be used in conjunction with multi-scan monitors. Unfortunately it is no longer available from any commercial supplier, but full instructions are available in the Public Domain for making your own enhancer if you have a little technical and electronic knowledge. Written by Andreas Barth, these instructions are a good example of how information can be freely shared. Another document has been written by Nick Smith giving instructions on how to turbo-charge A5000 computers by increasing the speed of various components, though this is probably not something to be undertaken by the faint-hearted.

AddApps

The *Resources* filing system was a welcome addition when RISC OS 3 was first released, allowing ready access to the standard Acorn applications in ROM through the *Apps* icon on the icon bar. However, it can be very useful to replace some of the applications in the window or add ones which you use frequently. Applications from different disc locations can be pulled together into one handy place, and sub-directories can also be created.

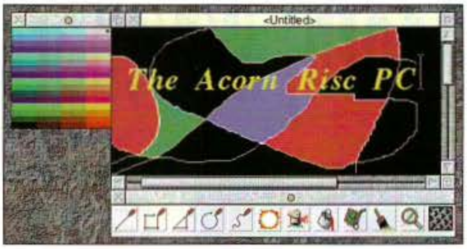


ADFS::Orange.$.Utilities.!ChangeFSI
Apps.!ChangeFSI
ADFS::Orange.$.!FontsPlus
Apps.!FontsPlus
ADFS::Orange.$
Apps.!MovieFS

RomApps
☑ Auto-run

Add applications to Resources under RISC OS 3.1

RISC OS 3.50 and later versions make it easy to change the contents of Apps simply by adding programs to the Apps directory on the hard disc, or editing a file in the boot sequence. On older machines running RISC OS 3.1, it is not quite so straightforward to add programs to Apps, but Rob Clark has written a utility called *AddApps* to make this easy. All you have to do is to drag some applications to its window and choose the *Save module* menu option. This creates a module which, when loaded, adds icons for your chosen applications in Apps. Sensibly, it creates links to them on your hard disc rather than attempting to store the entire applications in memory.



Graffiti: Spray windows, not walls!

Graffiti

I'm not quite sure why I like *Graffiti* by Andrew Lindesay so much. Probably for the same pointless reasons that people spray graffiti on walls in public places. Written in New Zealand, Graffiti is quite a powerful painting package, and is useful for young children to learn about painting, or for older people to just have some fun. As its name suggests, Graffiti is ideal if you want to draw pointless pictures on screen with the mouse in order to relieve stress or boredom, but it can also be used for serious painting or learning in the classroom.

Saviour

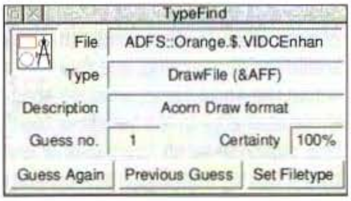
How often has an application crashed whilst you were busy working, and wiped out hours of work which you had forgotten to save? More and more application now offer auto-save facilities, periodically saving your masterpiece to disc without relying on your remembering to click the Save button. *Saviour*, by Ian Giblin, adds such functionality to any application which uses the F3 function key as a shortcut for saving files to disc. The time delay and various other options are configurable, making Saviour a potential life-saver if, like me, you rarely remember to save files while working on them.

HTML Tools

HTML is the language used to create World Wide Web pages on the Internet; and as with any language, it can take a while to learn the unusual syntax required to create pretty-looking pages. *HTML Tools*, by Ben Summers, is a set of loader and saver modules for Computer Concepts' *Impression Style* and *Publisher* packages, allowing them to help in designing professional and attractive-looking web pages.

TypeFind

How often have you been greeted by a blank icon in a directory viewer which belongs to an unknown filetype? Do you know what type of file is &C85? It can be quite frustrating to receive a file of unknown type. *TypeFind*, by Ben Schofield, maintains a database of filetypes, but can also recognise many types by the contents of the file, which is essential for files with the incorrect filetype. Simply drag an unknown file onto the TypeFind icon and it will tell you what type it believes the file to be, along with an indication of its percentage of certainty and various other options.



File ADFS::Orange.$.VIDCEnhan
Type DrawFile (&AFF)
Description Acorn Draw format
Guess no. 1 Certainty 100%

TypeFind identifies filetypes by their contents

Finally...

The Public Domain is a huge store of Acorn RISC OS software, some excellent, much mediocre and some poor. If you find a need for a particular program, don't just write it and thus possibly re-invent the wheel; check out the Public Domain first, and use any programming talent you may have to write original new software! If you have some spare time and expertise, but don't know what sort of application to write, try asking on a bulletin board or the Internet for ideas from other people.

Whither Acorn, Whither RISC OS?

Brendan O'Sullivan, head of the new Acorn/Apple company, Xemplar Education, talks to Alan Bonsor about his plans

Could you tell us something about the new company and your plans for it?

The new company is going to be dedicated to, and completely focused on, the education world and particularly primary and secondary schools. We believe the great opportunity for the company is that by bringing together two of the big players in the industry - Acorn and Apple - under one roof, we can exploit the best technologies and best services and solutions from both sides, for the benefit of each other. In other words, there are fabulous strengths within the Acorn camp, and there are fabulous strengths within the Apple camp; what we hope to do is to exploit these strengths to the benefit of the customer. Whether that customer be an Acorn user or an Apple user, we think they'll benefit from this cross-fertilization.

> ***When change occurs, one's first reaction is, "oh no, it's change, it's over."***

Prior to the announcement of the new company, Acorn had laid out its technology path, which stated that it was going to move towards the PowerPC/CHRP platform (Common Hardware Reference Platform) and bring its customers to that arena. Quite coincidentally, this was also Apple's stated goal. This company is here to ensure that this convergence will be to both sets of customers' advantage.

Specifically from an Acorn user's point of view, I think this offers tremendous opportunities and advantages to the current Acorn user base. Acorn users are very interested in technology, software products and solutions, but they also want to know that they're buying into a platform which is solid and which is going somewhere. When change occurs, one's first reaction is, "oh no, it's change, it's over." That's a natural human reaction no matter what the business is. In fact nothing could be further from the truth for the Acorn user. We have a situation whereby we believe that we can build upon the Acorn investment that customers have out there, more positively than Acorn ever could in the past.

Our short term plan, particularly for the Acorn side of the business, is to continue and develop the Risc PC and the A7000 range of computers. The new company commits itself to providing a next generation Risc PC based on the ARM810, and this will be launched in the near future. We have also announced development of the StrongARM-based Risc PC which will appear slightly further down the line. As far as the A7000 is concerned, we have already announced that we will provide a go-faster A7000, and there will also be a next generation A7000 based around the ARM7500 processor. We are therefore committing ourselves to providing the technology paths that the Acorn user requires on the Risc PC and A7000.

The reason I emphasize this commitment to the Acorn platform is that we get a lot of negative feedback from the marketplace that RISC OS is dead. Once again, nothing could be further from the truth. We see RISC OS carrying on, and the proof of this is that we can provide direction on two of our core product lines for another two generations. What other manufacturer that's allegedly moving out of its market can offer that kind of commitment?

The path for RISC OS is as solid as ever, and indeed I believe even more solid. In addition to committing ourselves to another two generations of A7000 and Risc PC systems, we are also committed to providing a CHRP-based system that will run MacOS and RISC OS. It's also fascinating to note that the Oracle network computer device will be running RISC OS or a variant of it. We could have a situation in a year's time, for example, where, if the Oracle system is successful, there are another 20 million RISC OS users around the world.

So I believe the story is very positive. We will provide a methodology and a platform which will continue to allow people who want to run RISC OS to run RISC OS.

Of course the whole IT world, from the beginning of PCs and before, is all about transition. It never stands still; it's always moving forward. As you look forward, think of all the potential changes ahead of us. Six or seven years ago IT meant PC. Today the PC is still a core solution device, but there are many other technologies that are converging - the portable digital assistants (PDAs), network computers, voice and handwriting recognition, etc. As we move forward what we need to do is to provide our customers with the most appropriate technology in whatever shape it will be. Will RISC OS be a part of that? Absolutely. Over time however we will offer many different products and we will give the customer the opportunity to go in whatever direction they choose.

It was Acorn's stated intention just a few month's ago to offer a range of PCs alongside the RISC OS range of computers. Will the new company's product range include Windows/Intel-based PCs as well as Acorn and Apple systems?

We don't see ourselves offering a Wintel solution as part of our education range, simply because we believe that the Acorn and Apple products we have are so much better. As it happens, however, there is a particular requirement for school administration systems which only run on PCs, and which our customers have told us they require. We will therefore provide them with that facility. But Wintel systems will not form the core of our strategic direction.

Prior to coming to Acorn, what was your knowledge and impression of the Acorn market, particularly considering that some people in the industry still seem to associate Acorn with the BBC Micro and nothing else? How much did you know about Acorn and Acorn computers?

I have worked in the computer industry for twenty two years, and it's an industry that I really love. I watch the industry a lot and, prior to coming to Acorn I already knew quite a bit about the company. The image of the Acorn community as a bunch of 'techno-weirdos' which some people might have, was not one that I shared. My view of Acorn was that it was a highly innovative company that perhaps didn't get the credit it deserved for its innovations; that had faced the challenge of being so successful with one product, in the form of the BBC Micro, that it became labelled as the 'BBC supplier'. I think that Acorn suffered because of that success. However, to answer your question, my personal view was that I knew that the company was developing superb technologies and that the Risc PC was very innovative. Indeed you must remember that the company that I'm coming from, Apple, has had a joint venture with Acorn, in the form of ARM Ltd, for the past six years now, using the ARM processor as the key technology in the Apple Newton PDA. So my view of Acorn was perhaps not quite representative of the public view; they really had great technology, knew what they were doing, but maybe paid the price for their success early on.

You have already announced plans to develop a new range of CHRP-based computers. However, these systems will probably take at least another year to appear and, one would assume, will be fairly expensive. Since a growing number of educationalists seem to be endorsing Windows-based software; since schools currently have almost no IT budgets; and since it is far cheaper for them to go out and buy very inexpensive PCs from a box shifter, is it not already too late to provide an effective alternative to Windows in the classroom? Is the battle not already lost?

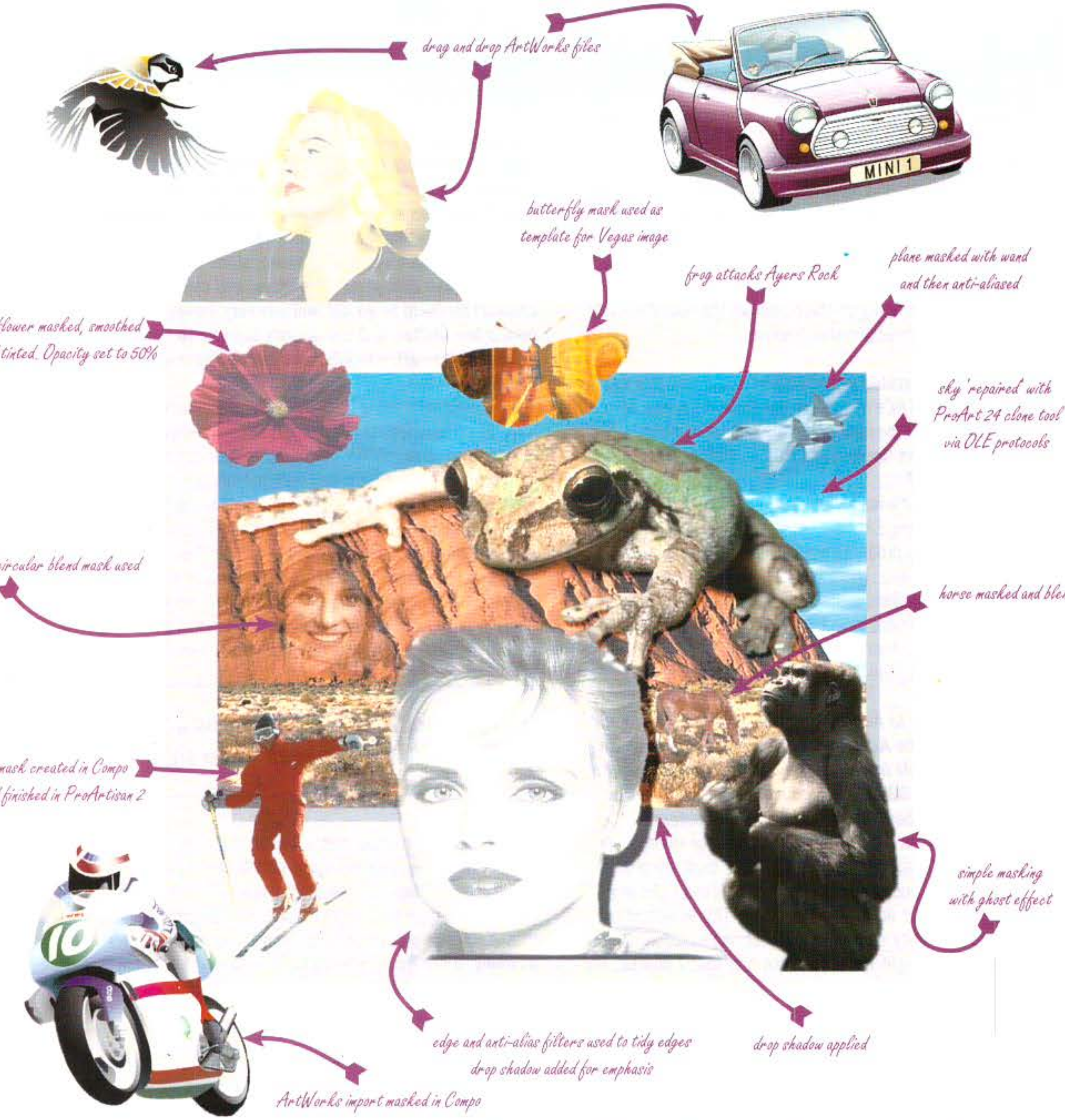
The concept of moving to CHRP is a future direction. We have to do business today, tomorrow, next month, next quarter and so on. CHRP comes later. Our game plan is complex indeed, and it's certainly not a case of killing off the enemy with one shot. Using the battle metaphor, we now have two regiments who up until now have been shooting both at the enemy and at each other. Our first positive step is that we can stop shooting at each other and point all our guns in one direction. The belief that the Wintel platform owns the education market is a common misconception; it doesn't. Windows does very well in the business world. It does pretty well in the education world, but if you combine Apple and Acorn together, you have as big a player as the Wintel platform in education, and that's where our target market is. Remember also that under the banner of Acorn and Apple, we will have as many, if not more, education orientated titles than the Wintel platform. We have a battle on our hands, and we're looking forward to it.

The path for RISC OS is as solid as ever, and indeed I believe even more solid.

The largest installed base in primary schools today is Acorn. Schools are not going to throw those away. What we will do is provide them with a continuing technology path which will exploit that investment. That is a RISC OS investment, not a Wintel investment. We are best positioned to bring that forward and to grow it, because schools won't, and can't leave it behind. They can't afford to.

Due to space constraints, it was not possible to include the full interview in the magazine. The complete unabridged text is supplied on this month's RISC User disc.

Composition



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RISC PC
EXCLUSIVE

Wimp Topics: Displaying Sprites and Handling Colours

Alan Wrigley explains how to ensure that sprites always display correctly whatever the screen mode

Sooner or later most programmers will want to write a program that needs to display graphics in a window. RISC User has already looked at one way of doing this, namely through the use of the *DrawFile* module to display Draw files (*Using the DrawFile Module*, RISC User 8:4), and even sprites by the same method (*Displaying Sprites with the DrawFile Module*, RISC User 8:8).

However, for those of you who are looking for a straightforward way of using sprites without the overhead of using DrawFile, this month's *Wimp Topics* looks at the whole question of displaying sprites in windows and getting the colours right. The method described here is only suitable for RISC OS 3.1 or later.

It's easy to underestimate the importance of getting colour translation right. Most of us tend to use one particular favourite screen mode for 90% of our work, and when we *do* change mode we take it for granted that all the icons in filer windows, for example, retain their appearance whatever mode we choose. However, this is not an automatic function of the Wimp, and the program itself must perform several tricks to ensure that any sprites it displays look correct for any screen mode. Most programmers find this out the hard way when they use *OS_SpriteOp* for the first time to put a sprite in a window, and then wonder why the colours look hideous as soon as they change mode.

Enter ColourTrans

The magic ingredient is the *ColourTrans* module, which is designed to translate any colour to its nearest equivalent in a given palette (which will often be the current palette for the current screen mode). ColourTrans is quite a complex module and has a great many SWI calls which provide a wide range of colour translation and calibration functions, but for the purposes of this article we are interested in just one of them: *ColourTrans_SelectTable* (&40740). In fact there is another call, *ColourTrans_GenerateTable* (&40763) which is virtually identical; the difference is irrelevant for our purposes.

ColourTrans_SelectTable sets up a translation table which can be used to look up the appropriate colour in the required mode for a given sprite colour. The table therefore consists of an entry for each colour in the sprite's palette (or the default palette for the sprite's mode if it doesn't have a palette of its own). The contents of this entry tell OS_SpriteOp what colour to use when plotting the sprite.

The translation table is placed in a buffer, which is then passed as a parameter when plotting the sprite. You can find out the size of buffer required if you need to, but as it will not be more than 256 bytes it's probably more convenient just to dimension a 256-byte block anyway. You may wonder how a 256-byte buffer copes with 32000 and 16 million colour modes; the way these are handled is a little different. When converting from a 16-bit or 32-bit mode to another 16-bit or 32-bit mode, no colour translation is performed, merely bit-stretching and compression. When converting from a deep colour mode down to an 8-bit or lower mode, the translation table, being 32K long, is already built into the ROM, and what is returned in the buffer is a pointer to it. This makes the handling of deep colour sprites a relatively painless affair, since OS_SpriteOp detects this automatically on a machine with the capability to handle these sprites.

Colour translation in practice

Armed with this knowledge, we can construct some code which calls ColourTrans_SelectTable whenever a sprite is loaded, or whenever the screen mode or the current palette is changed. This ensures that the parameters needed by OS_SpriteOp to plot the sprite correctly are always kept up to date. Unfortunately there is one slight snag in all this. 16-colour sprites without a palette of their own are not rendered correctly. The reason for this is as follows: as I said earlier, in the absence of a sprite palette, the default palette for the sprite's mode is used; but the default palette for 16-colour screen modes is not the normal Wimp one, but the old BBC-style palette. However, the good news is that there is a simple way around this. There is a Wimp SWI call, *Wimp_ReadPixTrans*, which will perform the translation in these circumstances. This only works for sprites up to 4 bpp (16 colours), so this gives us a simple algorithm:

```
IF (sprite has palette) OR (colours > 16) THEN
  USE ColourTrans
ELSE
  USE Wimp_ReadPixTrans
```

Last month's *Wimp Topics* described how to use the *Squash* module, and a demo application called *SquashDemo* was supplied on the magazine disc to illustrate the techniques. Conveniently, the same application can be used to demonstrate this month's article since the purpose of the demo is to display sprites in a window. SquashDemo is therefore supplied again on this month's disc, and its colour translation and sprite handling routines will now be described.

First of all you need a procedure which reads certain information about the screen mode. This must be called during initialisation, and also whenever you are notified of a mode change (Wimp message &400C1). This reads the *xeig* and *yeig* factors of the mode, which you will need to ensure that any sprites are plotted with the correct pixel ratios:

```
DEFPROCreadmode
SYS "OS_ReadModeVariable",-1,4 TO ,,xeig%
SYS "OS_ReadModeVariable",-1,5 TO ,,yeig%
ENDPROC
```

Next you need to load in your sprite. This has been covered before in RISC User, but for the sake of completeness I'll repeat it here. Assuming the sprite is unsquashed, that you have satisfied yourself that the file being loaded is indeed a sprite file, and that you don't already have somewhere to store it, then proceed as follows:

```
SYS "OS_File",17,file$ TO ,,,,len%
spr%=FNallocate(len%+4)
!spr%=len%:spr%!8=16
SYS "OS_SpriteOp",266,spr%,file$
sprite%=spr%+spr%!8
```

This finds out the length of the file with OS_File 17, claims a block of memory at *spr%* for the sprite area (which must be 4 bytes longer than the file) using the RISC User Heap Manager, sets up the sprite area and loads the file using OS_SpriteOp 10. The last line sets the variable *sprite%* to point to the first sprite in the file, and will be used in subsequent OS_SpriteOp calls (which means that 512 must be added to R0 for all such calls, indicating that we are accessing a user sprite area and R2 will contain a pointer to the sprite).

Sprite information

Having loaded the sprite, you need to get some information about it, specifically its size and the mode in which it was created. This is done with OS_SpriteOp 40:

```
SYS "OS_SpriteOp",552,spr%,sprite% TO ,,,sx%,sy%,,sm%
```

(remembering that we are adding 512 to R0 for all sprite calls). This call gets the dimensions of the sprite in pixels in *sx%* and *sy%*, and its mode in *sm%*. Note that all the calls we're using work perfectly well with mode specifiers on RISC OS 3.5 or later, and you don't need to worry about the difference in your program. Now we need the xeig and yeig factors for that mode in order to know the sprite's pixel ratio, and also the number of colours in that mode:

```
 SYS "OS_ReadModeVariable",sm%,3 TO ,,col%
 SYS "OS_ReadModeVariable",sm%,4 TO ,,spxeig%
 SYS "OS_ReadModeVariable",sm%,5 TO ,,spyeig%
```

The number of colours minus 1 is now in *col%*, and the mode's xeig and yeig factors in *spxeig%* and *spyeig%* respectively.

What we must do now is to convert the sprite's size in pixels to OS units. In some cases you may not actually need this information, but usually you will, since it's normally important to know exactly where in the window the sprite will appear and how big it will be. We must also at this point set up a scale factor buffer, so that when the sprite is plotted its size can be adjusted if its xeig and/or yeig factors are different from those of the current mode. This buffer is used by OS_SpriteOp 52 which we will be using to plot the sprite, and consists of four words as follows

```
buffer+0     x multiplier
buffer+4     y multiplier
buffer+8     x divisor
buffer+12    y divisor
```

So the multiplier words will contain the xeig and yeig factors of the sprite, while the divisors will be the factors for the current mode. Putting all this into code we get:

```
sx%=sx%<<spxeig%
sy%=sy%<<spyeig%
!sc%=spxeig%:sc%!4=spyeig%
sc%!8=xeig%:sc%!12=yeig%
```

where *sc%* is a 16-byte buffer previously dimensioned.

Finally, before we plot the sprite we need to set up the colour translation table. This is done by the following procedure:

```
DEF PROCreadtrans
IF sprite%!32>44 OR col%>15 OR col%<0 THEN
  SYS "ColourTrans_SelectTable",
spr%,sprite%,-1,-1,trans%,3
  ELSE
    SYS "Wimp_ReadPixTrans",512,
spr%,sprite%,,,,,trans%
  ENDIF
  ENDPROC
```

This has been made into a separate procedure since it must be called whenever a new sprite is loaded, or whenever the application is notified of a mode change or a palette change (Wimp message 9). *sprite%+32* contains the value of the offset from the start of the sprite block to the start of the sprite data. This will be 44 plus any palette data, so if it is greater than 44 then the sprite must have a palette. If this is the case, or if the number of colours is greater than 16, then the ColourTrans SWI is called, otherwise Wimp_ReadPixTrans is called. Note that in the case of 32-bit sprites the value of *col%* will be &FFFFFFFF, which Basic will treat as a signed number (-1), so we must also test for *col%<0* as we have done here.

The entry parameters for ColourTrans_SelectTable as used here are as follows:

```
  R0 = pointer to sprite area
  R1 = pointer to sprite
  R2 = destination mode (-1 for current)
  R3 = destination palette (-1 for current)
  R4 = pointer to translation table buffer
  R5 = flags
       Bit 0: pointer to sprite (set) or
       pointer to sprite name (unset)
       Bit 1: if sprite has no palette, use
       current palette (set) or default
       (unset)
```

There are a number of other permutations of the parameters, but they are beyond the scope of this article and you are advised to consult the PRM (page 3-346) if you need further information. On exit, the translation table will be placed in the buffer.

You will notice that bit 1 of R5 allows you to specify whether to use the current or the default palette if the sprite doesn't have one. You might think that this would overcome the problem I described earlier of 16-colour sprites without a palette. In fact, it appears to make no difference in these circumstances whether this bit is set or not, so we still have to rely on Wimp_ReadPixTrans for such sprites.

The parameters for Wimp_ReadPixTrans are as follows:

```
  R0 =    0: system sprite
        256: user sprite where R2 points
             to name
        512: user sprite where R2 points
             to sprite
  R1 = 0: system area
       1: Wimp pool
       otherwise pointer to user sprite
       area
  R2 = pointer to sprite or sprite name
       depending on R0
  R6 = pointer to scale factor block
  R7 = pointer to translation table
       buffer
```

You will notice that in this case the call will actually perform the scale translation that I described earlier, but since we have to do it manually for sprites which go via ColourTrans anyway, there's little point in using the facility here, and so R6 is left as zero.

Plotting the sprite

We now have all the elements needed to plot the sprite. This should be done in the redraw loop, and will consist of a call to SWI OS_SpriteOp 52. This plots a sprite with scale factors and colour translation. The entry parameters are:

```
  R0 = 52 (or 308 or 564 as appropriate)
  R1 = pointer to sprite area
  R2 = pointer to sprite
  R3 = x coordinate
  R4 = y coordinate
  R5 = plot action
  R6 = scale factor buffer
  R7 = colour translation table
```

The x and y coordinates are where the bottom left-hand corner of the sprite will appear. The plot action follows the usual GCOL convention; to overwrite what is on the screen just leave this as zero. The scale factor and colour translation buffers have already been set up as described above.

SquashDemo displays the sprite by first setting the size of the window to the size of the sprite when it is loaded (using Wimp_SetExtent), and then plotting the sprite at *sy%* OS units below the work area origin. This can be achieved as follows:

```
  !block%=0:block%!4=-sy%
  block%!8=sx%:block%!12=0
  SYS "Wimp_SetExtent",whandle%,block%
```

and then in the redraw loop:

```
  ox%=bk%!4-bk%!20
  oy%=bk%!16-bk%!24
  SYS "OS_SpriteOp",564,spr%,sprite%,
ox%,oy%-sy%,,sc%,trans%
```

Once you have mastered the technique of displaying sprites in windows in a mode-independent fashion, you may like to add a bit of flair to your desktop programs by making use of Keith Vernon's excellent sprite manipulation routines in *All things Sprite and Beautiful* (RISC User 7:8).

Compiler Corner

Julian Smith discusses the latest version of the freeware C library DeskLib, which is supplied with Beebug's Easy C package

This article is about some of the changes that have been made to *DeskLib*, the freeware RISC OS C library, since I took over as moderator from Jason Williams (who wrote most of the core DeskLib functions and structures) last year. The changes described are in the latest official release of DeskLib, version 2.30, which was released in September 1995.

Beta versions of DeskLib have been developed since then; I am putting these onto the Oxford Acorn User Group ftp site:

`ftp://misc.linc.ox.ac.uk/aug/julian/`

so feel free to download and have a look. Any comments or suggestions are very welcome. Note that beta versions are being changed and updated all the time, so new features might be implemented differently in the next official release.

Miscellaneous changes

StrongHelp documentation

DeskLib now has a comprehensive hyper-text manual which uses version 2 of the freeware *StrongHelp* help system, written by Guttorm Vik.

A general problem with all technical documentation is keeping the information up to date with whatever it is documenting. It is all too easy to make a change in a function but forget to change the documentation accordingly.

To avoid this, the manual pages are machine-generated from the DeskLib header files, by looking for function and variable declarations and their adjacent comments. Any reference to a different function, structure-name or declaration is turned into a link to the appropriate help page, so one can look up the structure definitions for function parameters very easily, for instance.

Figure 1 shows an example help page. Each of the underlined words is a link to a different help page. As you can see, the text is taken straight from DeskLib's *Event.h* header file.

StrongHelp's manuals are actually image-directories with each separate page stored as an individual file. I can also generate pages which are written in HTML for viewing with a WWW browser; such a manual will be supplied with the next DeskLib release.

Because most of the header comments were not written to be converted into manual pages, some of the formatting is a little crude, but nevertheless, the ability to bring up details of a declaration by simply clicking on a link is very useful, and is much faster than searching through DeskLib's header files. Users of *Zap* or Guttorm Vik's own *StrongEd* text editor can also open a help page for the word nearest the cursor with a simple keypress, which is extremely convenient.

Crunched header files

There are now two versions of the DeskLib header files. In *!DeskLib.h_doc.* are the fully-commented header files, whilst in *!DeskLib.h.* are crunched versions, with all comments removed and some removal of excess white space.

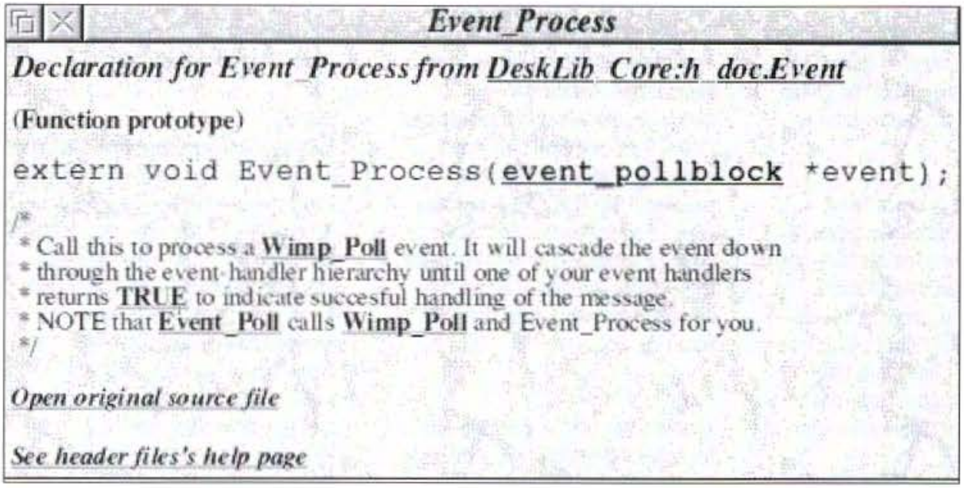
The crunched headers are the ones used in compilation; this speeds up the compilation process and so makes it practical to have lots of comments in the documented headers.

Source code directory

All source code is now in a *!DLSources* application directory, which also contains script files for building the different parts of DeskLib, template makefiles, a few command-line programs used by the script files and various other things.

Because there are now differently-compiled versions of each sub-library, each sub-library directory now has further sub-directories containing different makefiles and *.o* directories.

All building of DeskLib is now done with all compiler warnings turned on. Most of the code has been tidied



Event_Process

Declaration for Event_Process from DeskLib Core:h doc.Event

(Function prototype)

```
extern void Event_Process(event_pollblock *event);

/*
 * Call this to process a Wimp_Poll event. It will cascade the event down
 * through the event-handler hierarchy until one of your event handlers
 * returns TRUE to indicate succesful handling of the message.
 * NOTE that Event_Poll calls Wimp_Poll and Event_Process for you.
 */
```

Open original source file

See header files's help page

Figure 1. An example help page for DeskLib's *Event_Process* function.

up to compile with no warnings, with the notable exceptions of *Mem* and *Pane2*. The scripts are TaskObey files, so they run as task windows when double-clicked.

CLI programs
There are a few command-line programs included with DeskLib in the directory *DeskLib.!DLSources.Bin.*, which is added to your run-path by *!DeskLib.Sources.!Boot*. These are included because they are used by the scripts which build DeskLib.

A particularly useful one is *every2*. This accepts a filename with a similar wildcard specification to that used by Acorn's *Find* utility ('...' matches any number of subdirectories, and '*' matches any number of characters except '.') and runs a specified command on each of the matching files. In addition, RISC OS path specifications such as *System:* are expanded and searched.

Every2 is used by some script files to run AMU on each of the sub-libraries' makefiles, and also by a script which remakes every sub-library's makefile using another program called *Makatic*.

Dynamic linking
There is now a version of DeskLib which is a set of dynamic-link libraries, using the freeware *Straylight Dynamic Linking System*. Dynamic link libraries are shared between more than one application so that there is only one copy of a particular function's code in memory. This can give useful savings of memory if more than one DeskLib application is running.

Making a dynamic-linking DeskLib has been a rather complicated task, but now that the work has been done, converting new DeskLib libraries to use dynamic linking will be very easy.

Other changes
All DeskLib header files are now usable by C++ programs: the header files use

```
extern "C" {...}
```

if compilation is with C++.

I have removed all references to Acorn's *kernel.h* header file from the DeskLib headers. This enables DeskLib to be used with the RISC OS port of *GCC*, as long as the executable is linked with Shared C Library stubs (e.g. *gststubs*) rather then UnixLib.

New sub-libraries

Debug
DeskLib 2.30 has a set of functions (whose names all start with *Debug_*) which are very useful when debugging. All *Debug_* functions are macro-ed away *unless* `DeskLib_DEBUG` is `#defined`. This makes it very easy to build debugging and normal versions of a project from the same source code; you can put lots of calls to (for example) *Debug_Printf* safe in the knowledge that they will be completely removed in a non-debug build of a project.

There are some small libraries provided in the directory *DeskLib:o.Debug*. which send debugging information to different places, for example to *stderr*, to a unique file, or to a pipe which is automatically **type*d in a task window (so that debugging diagnostics are displayed in the task window while the program is running.

The main function provided is *Debug_Printf*. This behaves exactly like *printf*. Also provided is *Debug_Assert*, and *Debug<n>_Printf* (where *<n>* is a number from 0 to 5), which only outputs if the global int *debug_level* is greater than or equal to *<n>*.

At the moment, I am adding *Debug_Printf* statements to the DeskLib sub-libraries so that one can get detailed information about what is happening inside DeskLib. To avoid users of a debug-build of DeskLib being swamped by diagnostics, each sub-library uses its own version of *debug_level*, e.g. *menu2_debuglevel*. This allows the client application to selectively turn on different diagnostics as they are required.

Dialog2

This is an alternative to the *Dialog* library. I wrote *Dialog2* because of a number of problems with the way Dialog functions. For example, Dialog uses its own internal poll loop when a dialog window is open, which doesn't work when one's program uses its own non-standard poll loop (for example, one which calls *Wimp_PollIdle*).

In addition, Dialog2 windows are only created (using *Window_Create*) when they are actually open. This saves a small amount of RMA space and also reduces the amount of time spent by *Event_Poll* checking window records.

Dialog2 works by a program calling *Dialog2_CreateDialogBlock* with the name of the appropriate window in the Templates file. The returned pointer can be subsequently passed to a Dialog2 function to open the dialog window in any of three ways: as a static window, a transient window (i.e. it behaves like a menu), or as part of an existing menu.

In particular, using a Dialog2 window for a menu-dialog such as an application's 'Info' window is very easy; if one receives a *message_MENUWARN*, simply call *Dialog2_OpenMenuLeaf(event, dialog2)*, where *event* is the *message_MENUWARN* event and *dialog2* specifies the particular Dialog2 window. The rest (opening the window, closing it when the menu closes etc.) is all done for you.

Filing

This is a set of very useful routines for scanning directories, written by Sergio Monesi. For example, the function *Filing_ScanDir* will call a user-supplied function once for every object within a specified directory, recursing through any sub-directories.

There are also many other useful functions for scanning single directories, which are much easier to use than the plain *OS_GBPB* SWIs provided by RISC OS.

Font2

The RISC OS font system works in terms of screen pixels rather than OS coordinates. Because application redrawing works in terms of OS coordinates, this means that fonts have to be recalculated when the screen mode is changed.

This is usually done by detecting *message_MODECHANGE*, which is sent to applications when the screen mode is changed. On receipt of this message, applications tell the font manager to lose all of their fonts, and then claim them again, using the new screen mode's OS to screen pixel ratio.

Font2 provides font handles (actually pointers to blocks containing font handles) which are automatically updated so that the application-writer doesn't have to worry about this rather clumsy aspect of font management.

Menu2

This new library uses the existing *Menu* library to provide a slightly higher-level interface to menus. *Menu2* blocks are created for each individual menu or sub-menu when a program starts up, and then opened when necessary. Each menu requires three user-supplied functions to set menu flags (e.g. ticked, faded), create a sub-menu and handle a menu choice.
In a similar way to the *Dialog2* sub-library, *Menu2* only creates menus (using *Wimp_CreateMenu*) when they are actually open, in order to save RMA memory.

Print

This handles all aspects of the Wimp message protocol for printing. This protocol involves some fairly complicated sending of and replying to messages which is the same for all applications, so it makes sense to put the code for this into DeskLib.

Because handling a complex message protocol involves several calls to *Wimp_Poll*, the *Print* library has to use *call-backs*: the application passes pointers to functions which are then called when required, depending on how the print protocol progresses. The *Dialog2*, *Menu2* and *Save* sub-libraries also use call-backs, as does the *Event* library.

There is only one function provided: *Print_StartPrint*. This should be given pointers to three user-supplied functions for printing the data, saving the print data to a file (called if the print job is queued) and receiving information about whether the print operation was successful.

HINTS & TIPS

Keep sending us your hints and tips. We will give a free RISC User disc of your choice for each item that we publish.

Multiple launches

Richard Hallas

A feature of RISC OS which is often overlooked is its ability to open multiple files with a single drag operation. For instance, dragging a selection of items (files, directories and applications, say) from a filer window onto an unused portion of the icon bar will cause the directories to be opened, the files to be loaded into appropriate editors and the applications to be run, all in one quick and easy motion. The same is true for dragging files into applications; if you have a lot of archives, say, you can drag them all to the SparkFS icon (or other archive utility) to open them all simultaneously. The effect is the same as dragging all the files sequentially to the application in question, but is an awful lot quicker than dragging icons one by one.

Module help text

Matt Browne

An undocumented feature exists in RISC OS that is useful when writing help text (as part of the help and command keyword table) for relocatable modules. As the text is finally printed on the screen by RISC OS using *OS_PrettyPrint*, you can include token 0 in your text to insert the title of your module. So, if the help text was:

```
"You can only use the "+CHR$27+CHR$0+" module on Tuesdays"
```

and the title of your module was "Peanut", then the final text would read:

```
"You can only use the Peanut module on Tuesdays"
```

More problems relocating SlideShow on a Risc PC

Richard Hallas

The *SlideShow* application supplied with the Risc PC is most impressive, but together with its images it occupies a lot of hard disc space, and anyone who attempts to move it elsewhere (for example, to a SyQuest cartridge) will find that it refuses to work in the new location.

In the Hints & Tips column in RISC User 9:2, Dietmar Haltermann explained how to make the program work if you relocate either *SlideShow* itself or *ChangeFSI*, on which it partially depends. However, it transpires that there has been a later release of *SlideShow* which is substantially different internally from the one described in the previous hint, and for which that hint is inappropriate.

So, if you wish to relocate *SlideShow* but have a newer version than the one described previously, proceed as follows. This hint is certainly appropriate for version 1.07 of *SlideShow* (the version number is now given in the *!Help* file). All you need to do is edit a couple of lines in the *!Run* file. Change the lines which read:

```
    Set Images$Dir <Boot$Dir>.^.Images
    Set JPEG$File <Boot$Dir>.^.Utilities.!ChangeFSI.CFSIjpeg
    Set Shell$Messages <Obey$Dir>.ShellMess
```

to:

```
    Set Images$Dir SlideShow:^
    Set JPEG$File <ChangeFSI$Dir>.CFSIjpeg
    Set Shell$Messages SlideShow:ShellMess
```

(The amendment to the third line is not necessary to get this fix working, but is technically preferable and could avoid an error occurring under some fairly obscure circumstances.)

This does still require the filer to have 'seen' ChangeFSI before SlideShow will run. To make the application wholly independent and relocatable, copy the file *CFSIjpeg* from within *!ChangeFSI* into the *!SlideShow* application directory (it's only 18K in size), and amend the `Set JPEG$File ...` line in the *!Run* file to read:

```
    Set JPEG$File SlideShow:CFSIjpeg
```

Calculating Easter Sunday

Douglas Boote

Here's a little Basic routine which calculates Easter Sunday for any year from 1900 onwards:

```
    REM >EASTER Sunday Calculator
REM For the 20th century, the last two
REM digits of the year will suffice
T%=0
REPEAT
    INPUT '"Year",Y
    PRINT CHR$(13);CHR$(11);SPC(12);
    Y-=1900*(Y<100):C=Y DIV 100+1
    B=3*C DIV 4-12:G=Y MOD 19+1
    F=(8*C+5) DIV 25-B-5:A=5*Y DIV 4-B-10
    E=(11*G+20+F) MOD 30:E+=(G>11)*(E=25):E-=(E=25)
    D=44-E:D-=30*(D<21):D+=7-(D+A) MOD 7
    PRINT TAB(0,T%);"Easter Sunday ",D+31*(D>31);
    IF D>31 THEN PRINT " April, ";:ELSE PRINT" March, ";
    PRINT ;Y:T%+=2
UNTIL FALSE
```

Please send in your hints and tips on any aspect of using Acorn's RISC OS machines and Pocket Books. Published submissions will receive the magazine disc of their choice.

Graphics Notebook

This new column provides hints and tips for users of all painting and photo-retouching packages

Text enhancement for OCR work

David Symes

Having bought a Canon IX-4015 scanner with *Twain* driver, *ImageMaster* and *Sleuth 2*, I have been impressed with the performance of both the hardware and the software, and have found Sleuth 2 to be very accurate at its OCR conversions.

However, I scanned some pages of typewritten text recently and found Sleuth's conversion rate to be very low (probably only 10% to 15% accurate). Though the pages appeared perfectly adequate when viewed by eye, a close examination of the scanned images revealed very small gaps and holes where the ink had not been impressed into the fine texture of the paper. The OCR software was attempting to 'read' these holes, and therefore misinterpreting the shapes entirely.

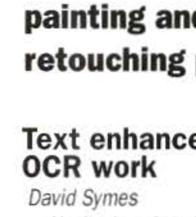


Figure 1

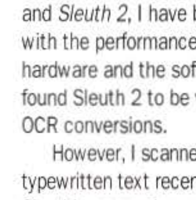


Figure 2

After some experimentation, I arrived at a solution to enhance the text and increase the success rate of the OCR conversion to roughly 80% to 90%. First, scan the page of text using a 4bpp grey-scale setting on the scanner, and load the resulting sprite into Paint. Give the sprite a palette (ensure that the *Palette* item in the *Paint>Edit* menu is ticked). The initial state of the palette is as shown in figure 1 (note that you will only see eight discrete shades of grey if you are in a 16-colour screen mode).

Now, for each of the sixteen shades in the palette, click on the shade to select it, open the *Paint>Edit palette* menu and edit the shade. Starting from the top-left entry, the first eight should all be made black, and the second eight should all be made white. You will end up with a palette like the one in figure 2. Save this palette file somewhere so that you can use it again.

Finally, resave the sprite and load it into ImageMaster. Open the *Colour>Change format* menu and change the *New* option from 4bpp to 1. Resave the sprite, drop it into Sleuth 2 and run the OCR process. You should find that the conversion accuracy has improved substantially.

Adjusting image sizes in Paint

Richard Hallas

Paint may not be the most powerful image editor in the world, but it's a very useful tool for cleaning up sprites at the pixel level, and for performing such operations as trimming images. It's very easy to increase the size of a sprite in Paint by inserting rows or columns, too. Just click Menu over the exact point at which you wish extra rows or columns to be inserted (it helps to be viewing the image at a zoom setting of at least 2:1 for accuracy) and enter the appropriate number into the *Edit>Insert rows* or *Edit>Insert columns* menu items.

There is a restriction, however: it is impossible to insert columns beyond the right-hand edge of a sprite or rows beyond the top edge of a sprite, even though this can be achieved at the opposite edges. Instead, to achieve the required insertion, you must use the *Edit>Adjust size* menu option which, unhelpfully, is grouped with a separate selection of options in the *Edit* menu. This option does, in fact, allow you to set the sprite to be any size, measuring from the bottom left of the image, and using it may involve either adding or deleting rows and columns.

Speeding up redraws in Compo

Andrew Rawnsley

Outstanding package though Clares' *Compo* may be, when you're working with large images, things can get a bit slow. However, there is an undocumented feature which can help to some extent.

Compo sports a hidden *Quick and dirty redraw* feature. Click Menu on the icon bar icon, open up the Info window, and click Select on the Kiwi in the window. A small dialogue box will pop up, saying whether the *Quick and dirty redraw* is turned on or off. To toggle the feature on and off, click Adjust on the Kiwi icon.

When turned on, redrawing of the window is speeded up, though the window contents can occasionally get out of date. Press *Ctrl-Shift-R* to force a full redraw. When the feature is turned on, you can also hold down Shift to speed up redrawing when scrolling or resizing the window.

Please send in your hints and tips on using Paint, The Big Picture, Revelation, ProArtisan, Studio 24, Photodesk and, indeed, any other relevant bitmap graphics package. Published submissions will receive the magazine disc of their choice

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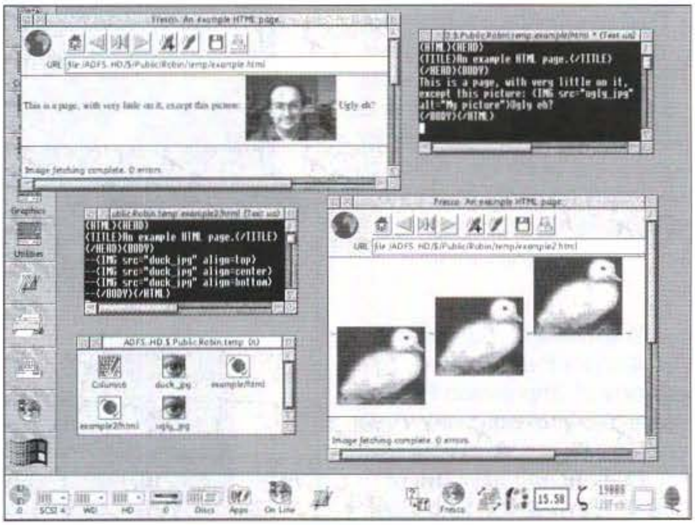
Netline

Robin Watts gets interactive with Java on the web

In mid 1994, Sun Microsystems, until then famous primarily as a hardware manufacturer, unveiled a new language, *Java*. Designed originally as a C++-like language targeted at embedded microcontrollers, Java, somewhat unexpectedly, found itself a niche in the World Wide Web where it has grown and gained amazing popularity.

Before Java

One of the biggest attractions of the web when it first appeared was its interactivity. Someone the other side of the world could connect to your computer, and not only read your pages, but by clicking on image maps (pictures with 'active' regions) could make choices about the way data was displayed to them.



```
<HTML><HEAD>
<TITLE>An example HTML page.</TITLE>
</HEAD><BODY>
This is a page, with very little on it,
except this picture: <IMG src="ugly_jpg"
alt="My picture">Ugly eh?
</BODY></HTML>
```

This is a page, with very little on it, except this picture: Ugly eh?

```
<HTML><HEAD>
<TITLE>An example HTML page.</TITLE>
</HEAD><BODY>
--<IMG src="duck_jpg" align=top>
--<IMG src="duck_jpg" align=center>
--<IMG src="duck_jpg" align=bottom>
--</BODY></HTML>
```

Fresco: An example HTML page
URL file:/ADFS::HD/$/Public/Robin/temp/example.html
Image fetching complete. 0 errors
URL file:/ADFS::HD/$/Public/Robin/temp/example2.html
ADFS::HD.$.Public.Robin.temp
Columns6
duck_jpg
example/html
example2/html
ugly_jpg
Graphics
Utilities
SCSI 4
HD
Discs
Apps
On Line
Fresco
15.58

Figure 1. Our two HTML examples on view in ANT's Fresco browser.

As HTML grew more powerful, and 'forms'-capable browsers appeared, the level of interactivity grew and grew. Crosswords and sliding block puzzles abound on the web, where hackers compete amongst themselves to make the most interactive pages possible.

This early interactivity came at considerable cost. When a user clicks on an image map in a browser, the coordinate clicked on is sent back across the network to the server. The server interprets this click, and replies to the browser with the URL to jump to. The browser then requests this page, and has to wait while it downloads from the server.

In theory a whole game could have been built like this, but it would have required an immense number of pages to be stored. For example, a 4 by 4 sliding block puzzle would require over ten thousand billion different pages to hold all the possible positions of the blocks. To solve this, a system of scripts was used. These *cgi-bin* scripts took input from the web, and used it to synthesise pages to send back to the distant browsers. Thus only a few of the possible pages would ever be required at once.

By increasing the complexity of these scripts, more elaborate applications can be built; in fact, the powerful search engines available for searching the web are all built on top of this technology.

There are of course problems with this. Every time you click on an image map, two messages get passed between the browser and the server before you even start to download the next page. On a network as crowded as the Internet, this can lead to some significant delays.

In an ideal world, you'd download the scripts to your browser and then run them locally, so that you could slide the blocks around your virtual puzzle as much as you want, and there would be no traffic generated on the Internet. Not only that, but scripts could be much more powerful, allowing animation, 3D rendering and much prettier sliding block puzzles.

Who can you trust?

While this sounds like a great idea, it does have some drawbacks. Suppose I am a hacker; I could write myself a super shiny sliding block puzzle with bells, whistles and a cute scrolltext, and tell everyone all about it. When people download the scripts to their machine and run them, as well as running my beautiful software, the script could also wipe their hard drive, or send all their interesting software to me.

Either you have to trust the people you are downloading web pages from, or you have to limit the power of these scripts.

Also, you have to make sure the same scripts work on all the different computers that might be being used to look at your site; it's all very well having scripts that run on a Risc PC, but what happens if the person running the browser is using DOS, Unix or Mac OS? With the proliferation of operating systems around today, it is infeasible to provide versions of scripts ready for every one of them.

Enter Java

Java provides an interesting way around these problems. When Java programs are compiled, they produce what is called *bytecode*. This bytecode is a form of machine code, but for a 'virtual' processor. This means that to run a Java program, or *Applet*, on, say, a 486, the 486 has to emulate the virtual processor.

This means that, rather than supplying lots of versions of your scripts, you can simply supply a Java program. When the browser downloads the Java program, it can run it by emulating (pretending to be) a virtual machine.

Also, because the browser has full control over what the virtual machine is doing, you are guaranteed that no program you download from the web is going to be allowed to trash your hard disc; so you can't write viruses in Java.

As if all these benefits weren't enough, Java is programmer-friendly too. It is based on C++, but with all the 'tough' bits removed; it is object-oriented, but it doesn't support multiple inheritance. (For those of you who don't understand that, don't worry; most of the people using it don't understand it either!)

It is also *late linking*: in C, when you use a library of routines in your program they are linked in when the program is compiled. With Java, the libraries are not joined to the program until it is actually run. This means that the libraries can be updated and bug-fixed after the program that uses them is compiled. This can be very useful, as Java programs can be assembled from across the net, so a program from one site can make use of a library from another.

JavaScript

For those of us who don't have a Java compiler, there are still ways to try our hand. Some browsers, including the ubiquitous *Netscape*, not only support compiled Java code, but also support a subset of the language in uncompiled form. These *JavaScript* programs can be put into your web pages as text, and will be interpreted by Netscape as it reads them.

So, how can you try all this exciting stuff out? Well, at the moment I'm afraid you can't; no-one has ported the Java virtual machine to RISC OS yet. All is not lost though; a couple of days ago, Larry Ellison, the head of the Oracle Corporation, responsible for ART's new *Netsurfer* device, publicly promised that Java would be shipped free with every machine. Given that the Netsurfer runs a variant of RISC OS, it seems likely that we might well get a port of Java on the back of this.

Web authoring

Even if you think Java is too much for you, don't let that stop you having a go at creating your own HTML pages. In the first part of the series, I showed you how to create a simple web page with some text on it. This month we are going to get more adventurous, and look at adding some graphics.

Before that, though, any of you who tried to extend the page I gave you last week may have run up against a problem: the browser has no way of knowing when you have reached the end of a paragraph. To tell it, we use the *<p>* tag. For instance:

```
   <HTML><HEAD>
   <TITLE>An example HTML page.</TITLE>
   </HEAD><BODY>
   This sentence should be my first
paragraph.<p>
   This one should be my second.<p>
   </BODY></HTML>
```

will display as two paragraphs. Remove the *<p>*s and you'll have just one block of text. To see this in action without a modem, you can use a web browser and its *Load from local disc* option, as I described last month.

Now, on with the graphics: first of all, find yourself a GIF or a JPEG image. If you don't have one of these lying around, then you can use a tool like *Spr2gif*, *ChangeFSI* or *Creator* to generate one. For now let's suppose you are using a file called *ugly_jpg*. Let's amend the sample web page we had last month to be as follows:

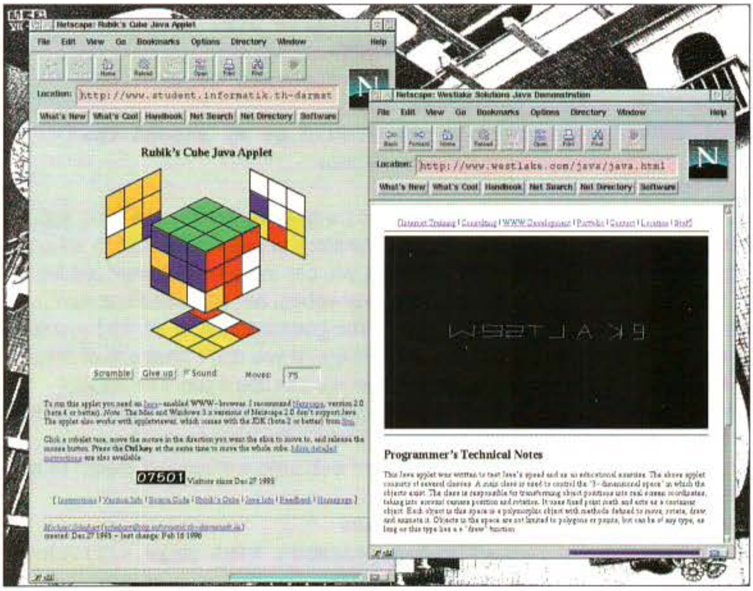
```
   <HTML><HEAD>
   <TITLE>An example HTML page.</TITLE>
   </HEAD><BODY>
   This is a page, with very little on
it, except this
   picture: <IMG src="ugly_jpg" alt="My
picture">
   Ugly eh?
   </BODY></HTML>
```

When viewed in a web browser, the *IMG* tag is replaced by *ugly_jpg* (see figure 1). If the browser doesn't support in-line images, or has image loading turned off, the *alt* section gives some text to display instead of the image.

One trick introduced by Netscape, that many other browsers are now adopting, is additional *width* and *height* tags for images. Traditionally, when browsers load pages with images in them, they cannot work out where to display the text until they know the size of the images. This has meant that at least the first part of the image must be downloaded before the text on the page can be displayed. When downloading across slow connections, this can take a long time; especially annoying if you are just loading a page to get to a link on it.

By adding *width* and *height* tags to the *IMG* line as below, the browser can leave room for the images and fill them in later, resulting in much faster access for most users. Even if your browser doesn't understand these tags, it certainly doesn't hurt to have them there.

```
  <IMG src="ugly_jpg" alt="My picture
" width=135 height=98>
```


Netscape: Rubik's Cube Java Applet
File Edit View Go Bookmarks Options Directory Window Help
Home Reload Open Print Find
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Rubik's Cube Java Applet
Scramble Give up Sound Moves: 75
07501 Visitors since Dec 27 1995
created Dec 27 1995 - last change Feb 16 1996
Netscape: Westlake Solutions Java Demonstration
File Edit View Go Bookmarks Options Directory Window Help
Back Forward Home Reload Open Print Find
Location: http://www.westlake.com/java/java.html
What's New What's Cool Handbook Net Search Net Directory Software
WESTLAKE
Programmer's Technical Notes

Figure 2. The X Windows version of Netscape 2 running a pair of Java Applets under Unix.

The widths and heights are given in pixels, and can generally be found by examining the pictures in a viewer.

JPEGs and GIFs are useful for different things; in general you should use JPEGs for 'natural' images like photos, and GIFs for things like logos. JPEGs do not support transparency, so you can only have rectangular pictures, whereas using a tool such as *GifTrans*, you can have GIFs with transparent colours (like masked sprites). It is also considered bad style to include huge in-line images on your home page; it's better to have thumbnail images that people can click to get the full versions; that way, people only have to pay to download the whole thing if they want to.

HTML also provides some rudimentary control over the alignment of text and images. The following page shows this off:

```
<HTML><HEAD>
<TITLE>An example HTML page.</TITLE>
</HEAD><BODY>
–<IMG src="duck_jpg" align=top>
–<IMG src="duck_jpg" align=center>
–<IMG src="duck_jpg" align=bottom>
–</BODY></HTML>
```

The *align* tag tells the web browser which part of the picture the text should be aligned with (see figure 1). This can be useful when images are used to represent things like equations.

The last thing to know about using images in web pages is interlacing. When images are stored, they tend to be stored in rows of pixels, so as they download you see more and more of the image. Recently a new version of the GIF standard has emerged that allow images to be stored in 'interlaced' format. This means that the lines of the image are stored in a different order; when these are downloaded they give a good idea of what the full picture will look like, and again mean that you can often get what you want from the page without having to download it all.

A similar, *progressive* extension to the JPEG standard has also appeared which offers even more impressive results. Although most browsers have been updated to support *interlaced GIFs*, very few support *progressive JPEGs*, but this will change over the next few months as they become more and more common.

Next month we'll cover some more HTML, and I hope to talk about how the web is embracing Virtual Reality.

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Mini Reviews

Richard Hallas takes a look at four CDs of public domain software and resources from APDL

APDL is the longest-established public domain library for Acorn 32-bit computers, and as such has a wealth of software on offer. Over the last few months it has released four CD-ROMs which contain the majority of the library: two each of PD software and DTP resources.

Public Domain disc 1

The public domain discs are divided nicely into 'serious' and 'fun' collections, with the first disc being the serious one. The layout of the disc is no-nonsense: all you see upon cataloguing it is an array of 35 directories into which the programs are helpfully grouped. Almost all programs are contained within ArcFS archives, so that they can both be compressed and retain their original RISC OS filenames without being affected by the restrictions imposed by the CD format. The CD-ROM contains just over 500Mb of material.

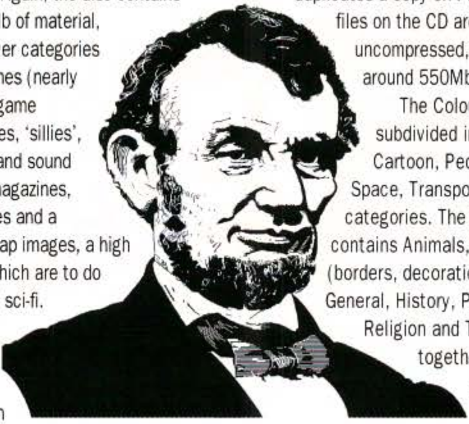
A catalogue to the disc's contents is provided both as a plain text file and an Impression document. The latter is obviously intended for printing by the users, but otherwise the contents appear identical. The information is well organised and helpful, giving program name, version number, brief summary of function and a compatibility symbol to indicate whether the program will work on RISC OS 2, RISC OS 3 etc. Unfortunately the key to the compatibility symbols has been forgotten, so you will need a separate copy of APDL's general catalogue to find out what the symbols are supposed to indicate! There is no indexing program as such, but that's no hindrance; the text file is easy to search, and the layout of the disc makes it easy to locate what you're looking for.

The overall range of material on the disc is very wide indeed, and includes general applications, graphics and file utilities, compression programs, comms utilities, databases, educational resources, programming aids, music and animation players, disc magazines and well over 100 complete books in ASCII format. There are no games on this first disc, except for a few Life variants. The contents themselves are of course very mixed in both subject area and quality, but there should be plenty of interest for everyone.

Public Domain disc 2

The second PD disc is the ideal complement to the first in that it contains all the kinds of fun things you can find in the public domain. Again, the disc contains just over 500Mb of material, although in fewer categories than CD 1: games (nearly 350 of them), game cheats, novelties, 'sillies', demos, music and sound utilities, disc magazines, graphics utilities and a number of bitmap images, a high proportion of which are to do with space and sci-fi.

Again, there is an index file in both Impression and plain text formats, and most of the contents are arranged sensibly in ArcFS archives. However, there is an unfortunate amount of duplication between this disc and the first one, in all the areas which fall between 'fun' and 'serious' (such as music players, graphics programs and the like). In fact, whilst there are differences, the large majority of the contents of the Graphics, Life, Magazines and Sound directories on the second disc are present on the first. The selection of music players is virtually the same, too, though the second disc also contains many Maestro and SoundTracker files. Therefore, this disc's major point of interest is the number of games and musical files it contains, along with demos and other trivial items.



The clip art quality ranges from the excellent...

It's worth bearing in mind that the contents of both discs are things that have been in the library for years; as such, a high percentage of them are are very old, and not all work well (if at all) with the Risc PC.

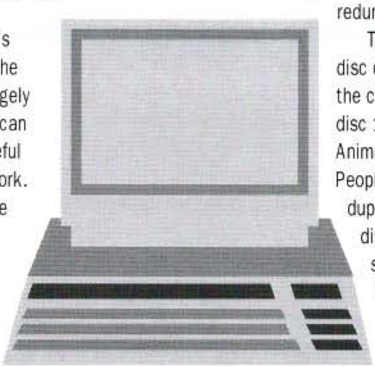
Verdict

Disc 1 is excellent value; disc 2 is its logical companion, but is less good value and duplicates rather a lot of material.

Desktop Publishing disc 1

This clip-art disc is divided into two main categories: Colour, containing over 580 sprites, and DTP, containing Draw files and sprites (mainly in monochrome) together with a selection of ArtWorks files in their own directory. There is also a copy of *EarthMap*, a globe-mapping application with an associated 13Mb database (which duplicates a copy on PD disc 1). The files on the CD are all uncompressed, and add up to around 550Mb.

The Colour directory is subdivided into Animals, Art, Cartoon, People, Plants, Space, Transport and Weather categories. The DTP directory contains Animals, Cartoon, DTP (borders, decoration etc.), General, History, People, Places, Religion and Transport, together with ArtWorks and Shareware files. This is where the bulk of the disc's appeal lies, as the contents are largely of the sort that can be generally useful for much DTP work. For instance, the *DTP.General* directory contains all sorts of signs, badges and other general-purpose categorised items. The categorization is fairly sensible, though it does get a little confusing at times (for instance, there are *DTP.DTP* and *DTP.GENERAL.GENERAL* directories).



...to the awful. These examples are both Draw files

So, there is plenty on this disc but, as with all PD material, you get a very mixed bag. There are some extremely good images, but there are also lots of pretty poor ones, and sprites in particular often suffer from being of the low-resolution tall-pixel (mode 0-style) variety.

APDL PD and DTP CDs

Supplier	APDL 39 Knighton Park Road Sydenham London SE26 5RN Tel. 0181 778 2659 Fax 0181 488 0487
Price	DTP-1 and DTP-2: £22.50 each or £42 for the pair (fully inclusive) PD-1 and PD-2: £17.50 each or £32 for the pair (fully inclusive) Quantity discounts available

Desktop Publishing disc 2

The second clip-art disc is like the first in that the majority of the contents are spread over Colour and DTP directories. However, this time there are rather more ArtWorks files, and there is also a disc indexing program, although I have to say that I did not find this significantly easier to use than the filer itself. There is also a novelty program which lets you pan around a London Underground map, although this dates from 1990; it's the sort of program which would have been fun when the Archimedes first appeared, but is now largely redundant.

The total contents of the disc come to around 530Mb, and the categories are very similar to disc 1: Colour subdivides into Animals, Fantasy, Fractals, People, Places and Space (which duplicates several items on PD disc 2), whilst DTP subdivides into Animals, Cartoon, DTP, General, History, People, Places, Religion, Science and Transport.

Once again, the contents are a mixed bag. The two DTP discs do form a useful pair because there is no duplication between them, and both cover different areas within similar general categories.

Verdict

These two discs present a vast amount of clip-art, and some of it is very useful. The overall quality is very uneven indeed, though, and it may be better to consider commercial alternatives.

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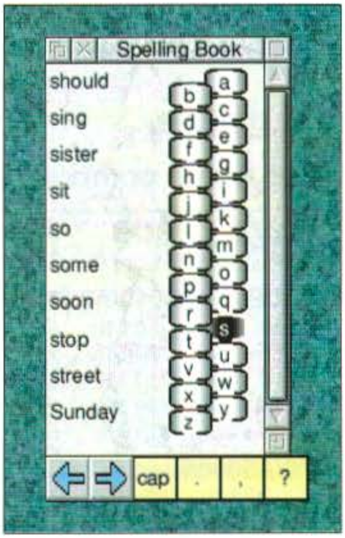
Spelling Book

Peter Jennings types in words from a pop-up dictionary

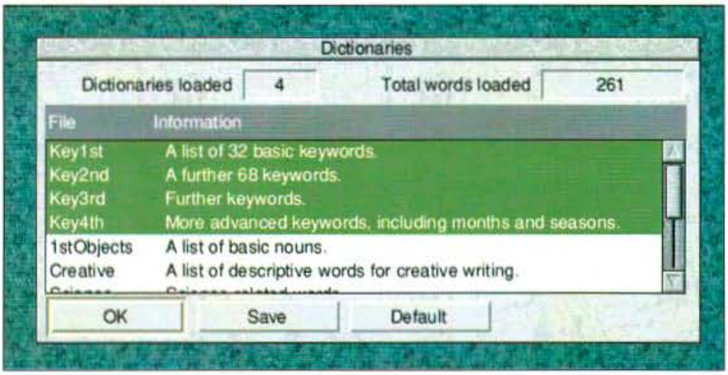
Spelling Book is not, as its name might suggest, an old-fashioned spelling tutorial; it is a well thought out aid for finding and spelling the right word that a child might need while writing. It is designed to be used alongside a word processor or other application to pop up a window where a word can be found and copied directly into the written work with a mouse click. A selection of integrated word games is also provided.



Clicking on a word or punctuation mark inserts it into the document being written

A word for every occasion

The program, from Creative Curriculum Software, provides more than just a single dictionary: it contains a selection of word lists


Dictionaries

Dictionaries loaded 4 Total words loaded 261

File	Information
Key1st	A list of 32 basic keywords.
Key2nd	A further 68 keywords.
Key3rd	Further keywords.
Key4th	More advanced keywords, including months and seasons.
1stObjects	A list of basic nouns.
Creative	A list of descriptive words for creative writing.

Any number of dictionaries, containing different types of word lists, can be combined to suit the individual user

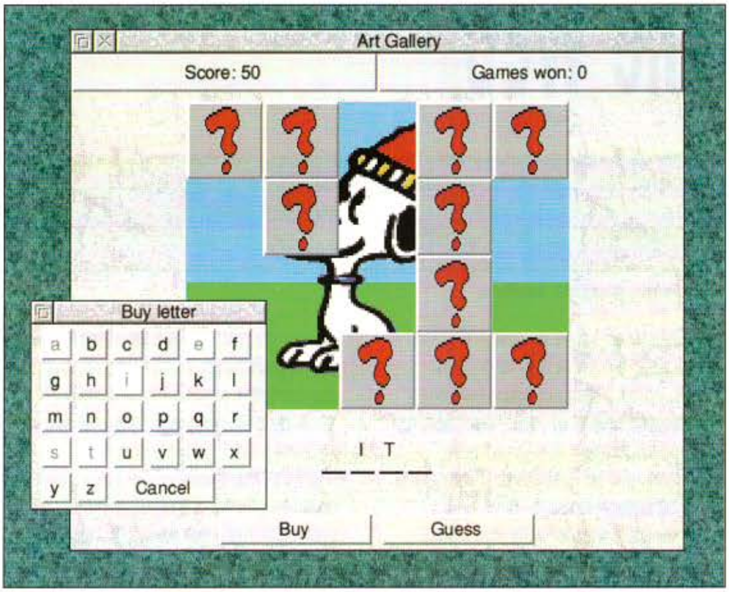
which can be loaded singly or in combination to make up a dictionary tailored to the individual user's needs. Additional lists can easily be compiled and added as required. The initial selection, intended to form a useful base set, contains four lists of *Keywords* of varying difficulties; *1st Objects*, which is a list of basic nouns; *Creative*, a collection of descriptive words for creative writing; and six lists of words related to *Science*, *Transport*, *Earth and Space*, *Farm*, *Woodland* and *Victorian* topics.

These word lists, referred to as *main dictionaries*, are all stored within Spelling Book as text files which can be edited and added to in the usual way using Edit or another text editor or word processor. New main dictionaries can be compiled as lists of words in any order, and they will be sorted alphabetically when saved into Spelling Book. Duplication does not matter, as only the first example of a word will appear in the loaded dictionaries. The main dictionaries cannot be altered while they are being used, so as to avoid accidental (or even deliberate!) errors being introduced; but each child can have a personal dictionary, stored outside the application, which can be added to or otherwise changed by the user at any time. This can be loaded with the main dictionaries or on its own.

Any of the main dictionaries can be loaded by default when the program is run, and this is set up from an icon bar menu which also allows dictionaries to be removed or added. A window lists all the main dictionaries, with a brief description of each, and indicates the loaded ones by highlighting them in green. The number of dictionaries loaded and the total words they contain are also shown.

Pop-up books

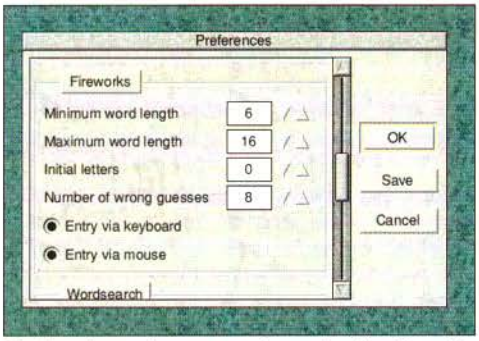
Clicking on the icon bar icon opens the main window, which looks rather like a telephone index with a set of alphabetical buttons to access the entries. This window can also be popped up from an optional 'S' icon, placed anywhere on screen, which will always reappear in front of any other windows opened over it. As already



Score: 50

Games won: 0

Each letter of a word correctly guessed reveals more of the Art Gallery picture



Minimum word length 6

Maximum word length 16

Initial letters 0

Number of wrong guesses 8

● Entry via keyboard

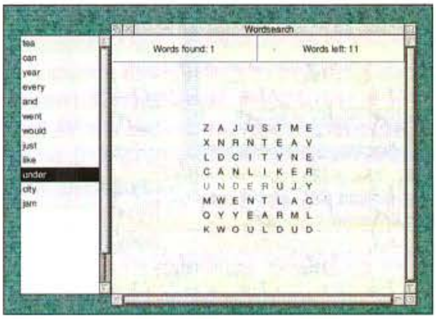
● Entry via mouse

Dictionaries and games can be customised to suit the user

mentioned, a single click on a word copies it at the caret in any document, and the word can be given an initial capital letter by first clicking on "cap" at the bottom of the main window or by holding Shift down. There is also a selection of punctuation marks which are copied by a single click in the same way. A space is automatically added after each word or punctuation mark unless this option is switched off.

The punctuation marks to be included in the main window are chosen from the display options in a *Preferences* window, which is also accessed from the icon bar. This also allows the degree of difficulty to be set in each of the three included games, *Word Search*, *Fireworks* and *Art Gallery*, by allowing choices which include the minimum and maximum word lengths and the number of guesses permitted.

The games all use words from the currently active dictionaries.



Words found: 1

Words left: 11

tea
can
year
every
and
went
would
just
like
under
city
jam

Z A J U S T M E
X N R N T E A V
L D C I T Y N E
C A N L I K E R
U N D E R U J Y
M W E N T L A C
Q Y Y E A R M L
K W O U L D U D

The three included games use words from the chosen dictionaries

Spelling Book

Supplier	Creative Curriculum Software 5 Clover Hill Road Savile Park Halifax HX1 2YG Tel. 01422 340524 Fax 01422 346388
Email	sales@ccsware.demon.co.uk
Price	Single user: £29 ex. VAT 10-user licence: £49 ex. VAT Site licence: £89 ex. VAT

Play on words

Word Search is the familiar square grid game in which words arranged horizontally, vertically, diagonally or even backwards, and have to be found within a jumble of letters. A list of the words can optionally be shown and the puzzles can be saved as Draw files and printed out to free the computer for other users.

Fireworks is a Hangman-type game in which the player has to find an unknown word by guessing the individual letters, indicated by dashes. Instead of gallows being drawn upon each wrong answer, correct guesses are rewarded with a burst of fireworks against a night sky, and when the word is finally revealed there is a bigger fireworks display to celebrate.

There is another variation of this in *Art Gallery*, in which the object is to gain points and reveal a covered picture, section by section, by guessing the letters in a word. Wrong guesses cost points whilst correct ones win them. A guess at the complete words also wins or loses points with a bonus being added for an early success.

Conclusions

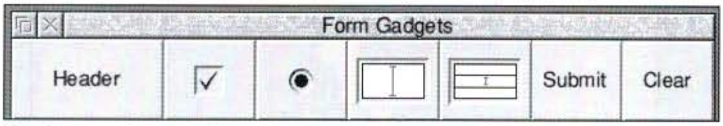
Spelling Book will be a valuable tool in schools, and can equally well be used by children at home. It could also be particularly helpful to older students using computers on an Essential Adult Learning course.

An Editor for the Web

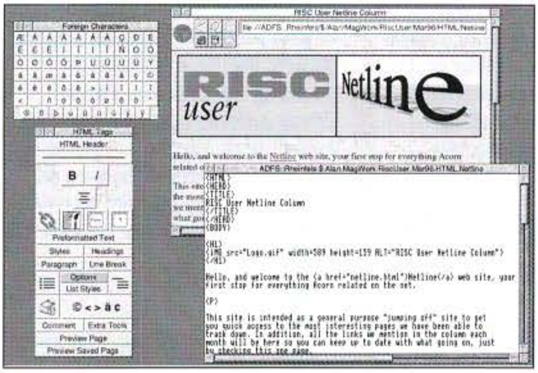
Colin Murray reports on a new version of R-Comp's RISC OS Web page editor

So you want to get your own pages up on the Web? You're not alone; it seems as though everyone with a computer is clamouring to get their own home page. But how do you go about creating it? You've probably heard of HTML (Hypertext Markup Language), which is the language used for Web pages, but how do you write it? Is it easy to learn? Or is it better to get someone else to write your pages for you?

In fact, it's quite straightforward to create your own HTML pages, and it's nothing to be afraid of. There are three ways of doing it at present on an Acorn: you can write your own files manually using a text editor (HTML is simply ASCII text with special codes or 'tags' included); you can use Impression with a set of shareware tools that allow you to save pages out in HTML format; or you can choose the sophisticated route by using R-Comp's *HTMLEdit*, which is a professional HTML editor. This package has been mentioned briefly in RISC User before, but a new version has just been released and so it seemed like a good time to review it more fully.



The forms gadgets toolbox



```
<HTML>
<HEAD>
<TITLE>
RISC User Netline Column
</TITLE>
</HEAD>
<BODY>

<H1>
<IMG src="Logo.gif" width=509 height=159 ALT="RISC User Netline Column">
</H1>

Hello, and welcome to the <a href="netline.html">Netline</a> web site, your
first stop for everything Acorn related on the net.

<P>

This site is intended as a general purpose "jumping off" site to get
you quick access to the most interesting pages we have been able to
track down. In addition, all the links we mention in the column each
month will be here so you can keep up to date with what going on, just
by checking this one page.
```

Editing a Web page with HTMLEdit. The main toolbox and the foreign characters toolbox are on the left, while the page is being previewed in a Web browser top right

You may wonder why you would need a dedicated HTML editor when you can simply compile files in a text editor. Well, it's a bit like trying to create a DTP document using Draw and Paint - it's possible, but a heck of a lot more fiddly than using Ovation. If you enjoy typing *<a href="../../wibble/widget/index.html">* to set a link to another page (and then re-typing it when you get it wrong), rather than just clicking a button and dragging the page into a dialogue box, then the best of luck to you!

HTMLEdit 2 is essentially a multiple document text editor with a comprehensive toolbox from which all the features of HTML can be accessed with a mouse click. This means that it is not fully WYSIWYG, but to compensate for this it will run alongside any Web browser, and a single click on the *Preview page* button will display the file being edited. This seems a sensible solution as it avoids the need to build a browser into HTMLEdit, which would add significantly to the cost (browsers are complex pieces of software).

A default document can be set up, and each time you open a new file, this will form the basis of the page. This enables you to standardise your copyright notices, background colours etc. on all your pages. Once a document window is open you can enter text exactly as you would with Edit (with all of Edit's usual features), but you also have the facilities of the HTML toolbox. This has buttons for all the main features of HTML: headings, styles, horizontal rules, non-English characters, alignment, bold and italic, list tags and styles and so on. One click enters the appropriate tags into the document. You can either select a section of text and apply the tag to that selection, in which case the tags are put round it in the correct place, or if no text is selected the tags are entered at the caret and the caret is placed in the correct position to start typing.

So far this is all child's play, and would not on its own justify buying a dedicated editor. But when you start wanting to enter links and images, the real power of HTMLEdit becomes apparent. For example, clicking on the image icon in the toolbox opens a dialogue box. You simply drag your image file into the box and click on OK, and not only is the tag entered into the document, but the relative path is also calculated automatically. This means that if you keep your HTML files and images in a directory structure on your hard disc which is

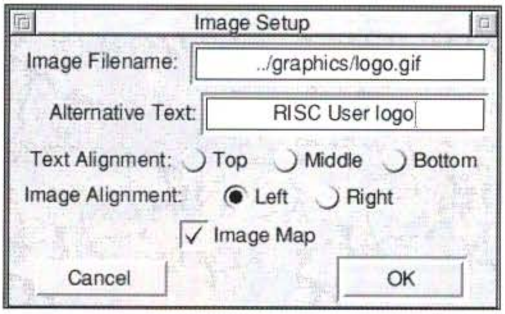


Image Setup

Image Filename: ../graphics/logo.gif

Alternative Text: RISC User logo

Text Alignment: ○ Top ○ Middle ○ Bottom

Image Alignment: ● Left ○ Right

☑ Image Map

Dragging an image to the dialogue box automatically calculates the correct relative pathname

identical to the structure you set up on your Web server, you never need to worry about pathnames: HTMLEdit will work out for you what path is needed to get from the document to the image - clever indeed!

Links to other pages work in exactly the same way via a dialogue box and, once again, if you are linking to your own pages then HTMLEdit will work out the path for you.

An extremely useful feature is automatic image file conversion from sprites to GIFs or JPEGs, which are the two image formats used on the Web. The converter is quite sophisticated; for example, both interlaced and transparent GIFs can be created, and the latter can use the sprite mask for transparency rather than a named colour as is often the case with other GIF converters.

Forms are handled easily. Clicking on the forms icon enters the tags for a form, and opens a subsidiary toolbox with all the form gadgets available, such as checkboxes, text areas, etc. Each of these has a related dialogue box which allows you to enter all the necessary details such as the name of the element and its default value, and clicking on OK sets up the tags and data in the document.

HTML is not a static language but is evolving all the time as the need grows for Web pages to become more sophisticated. The currently ratified standard is HTML 2, but the vast majority of Web pages nowadays use features which are not present in HMTL 2, largely as a result of the success of the Netscape browser which has forced the pace by providing non-standard features. Many of these will be incorporated into HTML 3, but some will not; and, of course, Netscape and other companies may have moved the goalposts yet again by then. When writing an HTMLEdit editor, the programmer has to make a decision on which features to include. I think HTMLEdit approaches this sensibly. It supports all the features of HTML 2 (plus forms as already mentioned), but when you start up a new document you are offered a choice between HTML 2 and HTML 3 compliance. If you choose the latter, you can then specify additional parameters such as background and link colours, and background texture image.

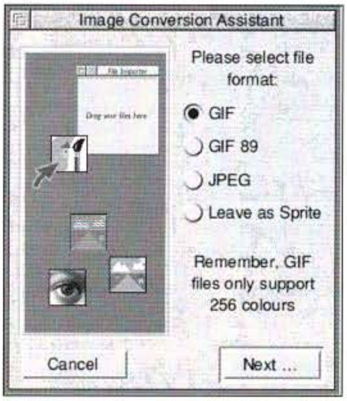


Image Conversion Assistant

Please select file format:

● GIF

○ GIF 89

○ JPEG

○ Leave as Sprite

Remember, GIF files only support 256 colours

HTML can convert sprites into GIFs or JPEGs

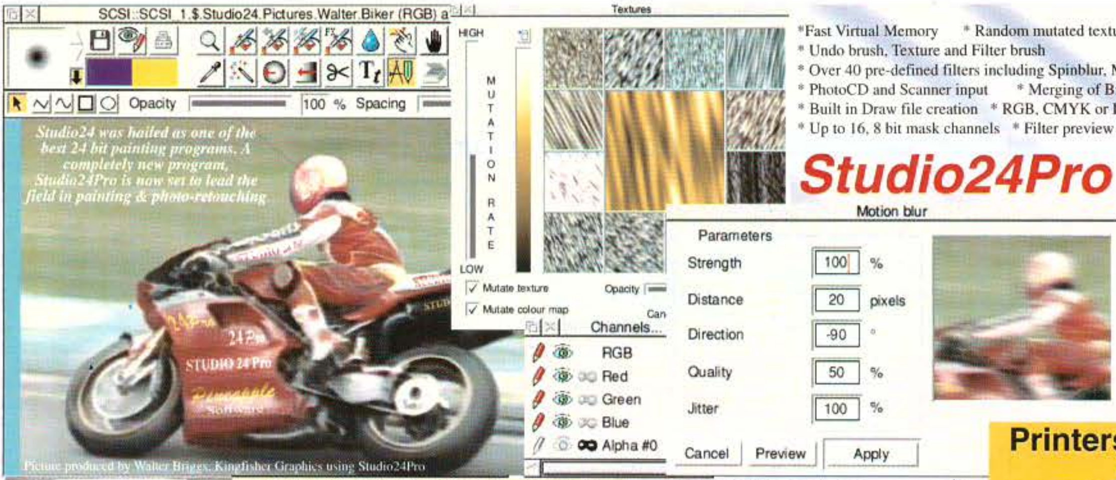
Not only this, but the application is updated very regularly, and as new HTML features become common, they will be added to the toolbox. There is also a plan to release very shortly an add-on which will enable you to define your own toolbox items, so that you can customise the program with any new HTML features that you use regularly. Another planned add-on at some point is an editor to enable you to create image maps (at present HTMLEdit allows you to add the map tag to an image but there is currently no RISC OS application to create the map file coordinates).

R-Comp believes (and I tend to agree) that the way ahead for software companies involves offering full email support for products. Registered users have access to an email as well as a telephone helpline, and are also sent regular updates by email. The author is very approachable, and if you ask for a particular feature it's quite likely to appear in an update before long.

HTMLEdit	
Supplier	R-Comp 22 Robert Moffat High Legh Knutsford WA16 6PS Tel. 01925 755043 Fax 01925 757377
Email	HTMLEdit@arsvcs.demon.co.uk
Price	Version 1 £30 (no VAT) Version 2 £45 (no VAT)

Conclusions

Most jobs in the world can be done in two ways: on the cheap, which is usually time-consuming and fiddly, or by using professional tools which cost money but make the job so much easier. If you value your time, £45 will hardly break the bank and will get you a very professional tool. If even this is too much, the original version is still available for £30 if you don't need all the features of the new one. I am using HTMLEdit all the time and I would not want to be without it. I haven't used HTML editors on a PC, but I am told that they provide hardly any greater functionality but cost a great deal more! Yet another example of a small dedicated Acorn software house providing powerful software at a fraction of the price on other platforms.


SCSI::SCSI_1.$.Studio24.Pictures.Walter.Biker (RGB) a
Opacity
100 %
Spacing
Textures
HIGH
MUTATION RATE
LOW
Mutate texture
Mutate colour map
Opacity
Channels...
RGB
Red
Green
Blue
Alpha #0
Studio24 was hailed as one of the best 24 bit painting programs. A completely new program, Studio24Pro is now set to lead the field in painting & photo-retouching
Motion blur
Cancel
Preview
Apply

Motion blur

Parameters
Strength 100 %
Distance 20 pixels
Direction -90 °
Quality 50 %
Jitter 100 %

Picture produced by Walter Briggs, Kingfisher Graphics using Studio24Pro

*Fast Virtual Memory * Random mutated texture generation
* Undo brush, Texture and Filter brush
* Over 40 pre-defined filters including Spinblur, Motion blur &Lig
* PhotoCD and Scanner input * Merging of Bitmap & Draw fil
* Built in Draw file creation * RGB, CMYK or Indexed channel m
* Up to 16, 8 bit mask channels * Filter preview window

Studio24Pro £149.8

inc va

'Many Acorn
front covers h
been creat
from scrat
using this
program alo
concrete pro
the power of
creative too
Acorn Use
March 96

Removable Harddrive System

Total Data Security & Harddisc Backup

The removable harddrive system fits into a 5¼" drive slot in the RiscPC and harddrives are available in many sizes which can simply plug in and out of the slot as required. The drive may be locked in place to prevent unauthorized removal. For total security the drive may be removed and stored in a safe place to prevent unauthorized access to your data. Because the removable drives are available in any size (up to at least 4Gb) they are also ideal for use as backups for existing harddrives, and may be easily transported between different computers for rapid transfer of large datafiles. The system is available for use with both IDE and SCSI filing systems.
External boxes are available to enable SCSI removable drives to be used with older Acorn models. Please 'phone for details.See opposite for prices.

PLC/3 £104.57

PAL TV Coders

The PLC/3 PAL TV Coder works in any of the Acorn 'Standard' Modes, (12 and 15) on all Acorn computer models. It has a 15 pin RGB output for the monitor, a BNC for video and an S-VHS connector. The PLC/3 will work with RiscPC computers although the AKF60, AKF85 and AKF90 will not work at the same time.

The AVK/3 will work with all computer models in all screen modes up to 800 x 600 resolution in 16 million colours. It has a remote control with facilities for zooming, freezing & panning the TV picture. Ideal for lectures and demonstrations etc. A SCART gives TV frequency RGB O/P which can be used for large screen TV's, and a phono socket for composite video and an S-VHS socket for S-Video are provided.

AVK/3 £355.00

ArtWorks Video Tutorial

A Brand new product from Pineapple is this VHS Video Tutorial covering the use of ArtWorks.
Walter Briggs is the tutor for this 1 hour video which shows how to use all the ArtWorks tools and then goes on to show how Walter produced his famous Tiger head picture. Walter also draws an impressive landscape picture which can be copied by those with no artistic talent at all!

ArtWorks Video Tutorial £19.99

24 Bit Colour Scanners

Pineapple can offer a wide range of Flatbed A4 colour scanners starting from as low as £359 including software and vat!
The Epson range is currently the most popular although Canon are expected to release a new scanner to replace their IX-4015 shortly. The cheapest in the Epson range is the GT5000 with an optical resolution of 300dpi. This is adequate for virtually all home use. The GT5000 is available with either a parallel or a SCSI interface. The GT8500 has an optical resolution of 400dpi and comes with both parallel and SCSI interfaces. Finally, the GT9000 is the top of the range with an optical resolution of 600dpi and both parallel and SCSI interfaces. Imagemaster and Twain software are included in the price, but we also offer our Studio24Pro Photo re-touching software at just £80.00 inc vat with every scanner purchase.

20 : 20 Finance available on all RiscPC's

Studio24Pro at just £49.00 with any RiscPC purchase
Studio24Pro at just £80.00 with any colour scanner
FREE membership of the Virus Protection Scheme with any RiscPC

Virus Protection

The Pineapple Virus Protection Scheme will allow you to detect and remove over 100 viruses from your Acorn computer.

'If you're interested in virus protection, join the Pineapple virus protection scheme and buy Killer. Accept no alternatives.'
- Acorn User Feb 96

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Primax Flatbed A4	£359
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Epson GT5000 (SCSI)	£499
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All scanners include Imagemaster & Twain. Studio24Pro at just £80.00

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RiscPC 600 Computers

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4Mb	HD425CD	14" Mon	£1450
4Mb	HD425	17" Mon	£1699
4Mb	HD425CD	17" Mon	£1825

RiscPC 700 Computers

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5Mb	HD425	17" Mon	£1925
5Mb	HD425CD	14" Mon	£1699
5Mb	HD425CD	17" Mon	£2049
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10Mb	HD850CD	14" Mon	£2069
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DX4-100 Card	£349.00	£229.00
586-100 Card	£579.00	£459.00

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Deskjet 660	colour	£315
Deskjet 850	colour	£415
Canon		
BJC600E	colour	£375
BJC610	col 720dpi	£415
BJC4000	colour	£276
BJC4100	col 720dpi	£276
BJC200	mono	£205
BJC210	(col option)	£222
Epson		
Stylus Colour II		£329
Stylus Colour IIS		£244
Stylus Pro XL (A3)		£1079

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Ilyama Visionmaster	
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Acorn User Mar 96

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Sleuth 2 is a truly professional OCR system with superb features like auto page zoning, style recognition, fully integrated spelling checker and guided editing. Sleuth converts scanned images of printed material into ASCII files and can handle virtually all popular fonts in a wide range of styles achieving over 99% accuracy on good quality images. You will need 4Mb Ram and an Acorn-compatible scanner with a minimum resolution of 300 dpi. Sleuth can scan images directly using Twain drivers, which are available separately.

SLEUTH 2 Price £99 *+ £1.70 Carriage*

MASTERFILE

General Purpose Database

Masterfile is a fast and flexible general purpose database providing powerful data management facilities suitable for business, education and home. Masterfile is probably the easiest Acorn database package to setup and use! Its many features include a comprehensive indexing system, subsets which limit access to just those records which match search criteria, and a report generator which allows databases to be printed in a variety of card, spreadsheet or label formats.

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EASY C++

C++ Development System

Easy C++ is an excellent implementation of the in-vogue object oriented programming language C++. This implementation conforms to the latest Stroustrup text and supports both Templates and Exceptions. Unlike some other implementations, Easy C++ is not a C++ to C translator but compiles C++ source directly to ARM code making it quick and easy to use. Easy C++ uses the much praised Easy C WIMP interface which allows programs to be compiled, linked and run at the click of a button. The package includes ANSI C and IOStream libraries, Make facility, integrated ARM assembler, source level debugger and also supports Throwback. The original highly acclaimed Easy C package is also still available.

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TypeStudio is the best selling font effects package that allows outline fonts to be manipulated to produce professional quality posters, banners, logos, letterheads etc. — the possibilities are endless. Text may be flowed along straight or curved paths, or moulded into almost any shape. A wide range of interesting effects may then be applied to enhance the design further. These include: wall, floor and graduated shadow, 3D text, mirror, plinth, slant. You can use all of these effects on Draw files too! TypeStudio is intuitive to use, and unlike some other packages, paths and moulds may be created and edited using the drawing tools provided, so you can do all your design work using just the one package.

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Hearsay is the definitive general purpose communications package for Acorn systems, designed for easy communications for the first time user, but with advanced features making it also the professionals choice. Hearsay provides high quality VT terminal emulations, and is ideal for use with Prestel, Campus 2000, Compuserve and virtually all bulletin board systems. Other features include: background file transfer, number directory, script language and support for popular modems.

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Hard Disc Companion is the acclaimed package that provides a structured system for backing up hard drives to floppy discs and other devices. It supports Full and Incremental backups with data compression. Files to be backed-up or ignored are chosen using simple drag operations. The backup specification may be saved in a script file for use at a later date. In the event of disc failure or accidental file deletion, files may be retrieved using simple drag operations.

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Classifieds

Members may advertise their unwanted Acorn related hardware and software through the personal ads column free of charge. However, we are unable to guarantee in which issue your advertisement will appear. We also accept non-member's ads at the rate of 40p per word

WANTED: Artworks software, preferably CD ROM version. Tel. London 0181 349 4877.

Early BEEBUG magazines 1.1 to 6.10 in 6 binders and complete, Acorn User issues 1-44 in 4 binders and complete. Offers? BBC B O.S1.20, DFS, Viglen 5.25" 40/80T twin drive, Acorn Second Processor, Thorn cassette recorder, Microvitec colour monitor, Lincoln AID ROM, Speech! and Italian software, books, 50 blank 5.25" discs, 25 blank cassettes, all boxed with instructions/manuals £200 o.n.o. A310, 1Mb, RISC OS 2, external drive interface, Acorn colour monitor, Watford Electronics 5.25" twin 40/80T drive, 50 x 5.25" blank discs, BEEBUG DFS reader, all boxed with instructions/manuals £400 o.n.o. Tel. 01249 658109 after 6pm.

Computer Concepts Colour Card Gold II software and manual £150. Tel. 01707 264825.

Archimedes A440 with ARM3, RISC OS 3 and 100Mb SCSI drive plus Taxan 770 multisync monitor, price includes software, manuals and reference books £500 o.n.o. Berks 01344 426878.

Wanted: 486 PC card for a Risc PC, doesn't have to be fast, just cheap! For Sale: Any offers considered on a 5.25" external floppy with PSU and BEEBUG disc buffer. Tel. Cardiff 705304 or email: dawsontp@cf.ac.uk

Acorn Pocket Book A-link, RS232 interface & PocketFS2 for Pocket Book or Psion 3a. Tel: 01606 834745 or email: krane@netcentral.co.uk

M128, Morley Master ROM board AA, BEEBUG Master ROM, 2xquad cartridges, 2x400k drives, (sw 40/80 own psu) linked as double, Acorn Teletext adapt./ATS ROM, Morley Eprom Programmer, ROMs: Interword/Sheet/Chart/Base, Spellmaster, WWPlus 2, ADI (Disc investigator), Discs: Mini Office, Printwise, Studio 8, full documentation plus over 100 discs and more £250. Tel. London 0181 998 4531 anytime.

Star LC24-200 colour printer & ribbons £85, Wolfenstein £15, Diggers £12, Dungeon £10, Desktop DB £10, Revelation £20 all as new. Atelier £20, PCEmualtor & DOS 6 £25, Real McCoy 2 £15, TechWriter £50. Tel. 01727 856085.

Canon bj-10e bubble jet printer, automatic sheet feeder, two ink cartridges, excellent condition. Tel. 01296 615825 or email: timil@argonet.co.uk

Cumana 300iACD ROM drive with sound mixer, manuals and CD utilities, ideal for any Risc PC owners £100 + £10 p&p or arrange collection, also Personal Accounts V3 £20. Tel. Leicester 01162663721.

WANTED: A3000 computer, 2Mb, Risc OS 2, ARM2, colour monitor in good condition, reasonable price for young student. Tel. Lancashire 01706 817570.

Derbys Acorn Risc Club

The inaugural meeting of this group will take place on Monday 15th April 1996. Subsequent meetings on the second Monday of each month at the same venue. Venue - Church Hall of St Agustine in Duffield, this lies east off the A6 on the Little Eaton Road. Time 1930hrs until 2130hrs. GUEST SPEAKER - Chris Cox of Clan Acorn and Acorn Risc Technologies, followed by a general discussion on the type and structure of future meetings. The acting chairman is Mike Smith who can be contacted by telephone 01629 540281.

Fireworkz Pro (v1.22) complete with all manuals £55 for quick sale. Tel. Norfolk 01328 864177 eves & w/ends.

A3000 computer, ARM3, RISC OS 3.1, 4Mb RAM, 180Mb HD £310, Taxan 795 monitor also available £150, computer & monitor £420. Write to; Mr Kidner, Mayville, Mid Cross Lane, Chalfont St Peter, Bucks SL9 OLF.

Easiwriter Professional, version 3.16 with manuals £85, Acorn Advance version 1 £35, MacFS Light version 1.04 £30, prices inc. postage and packaging. Tel. Edinburgh 0131 447 8624.

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Clares Micro Supplies	40	Pineapple Software	60
Computer Concepts	49	BEEBUG Software	61
Softease	53	Skyfall	64

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